

THE BEGINNING
OF THINGS



Ancient Mariners

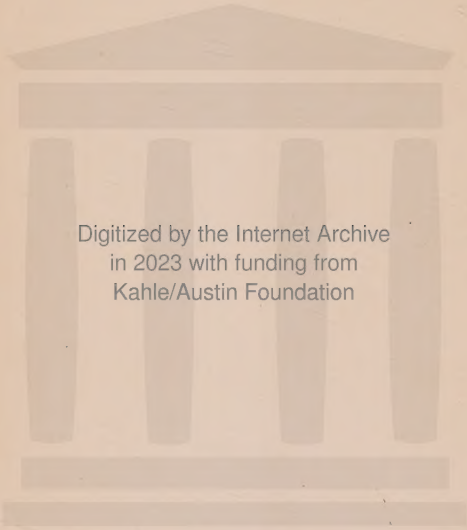
by
C. Daryll
Forde



Denis Russell

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THE BEGINNING OF THINGS

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ANCIENT MARINERS

by C. DARYLL FORDE

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Ancient Mariners

THE STORY OF SHIPS AND SEA ROUTES

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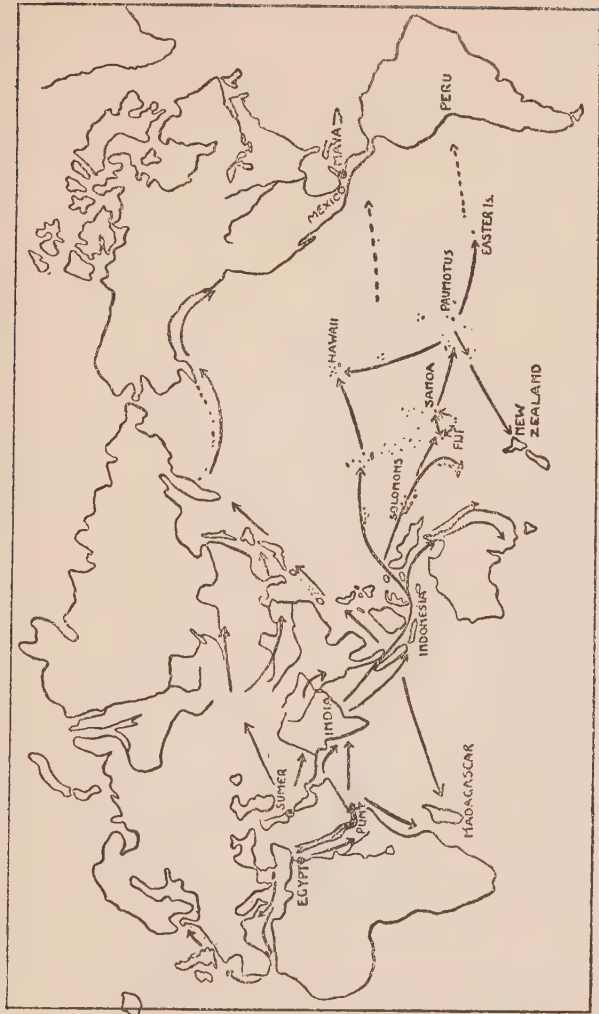
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TRACKWAYS OF THE ANCIENT MARINERS

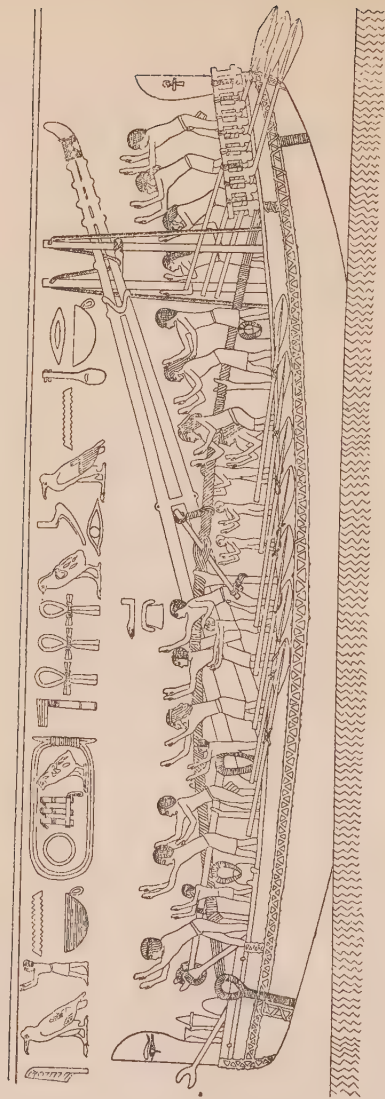


FIG. 1.—A SHIP OF THE FLEET OF SAHURÉ (c. 2700 B.C.)

After Borchardt]

[Drawn by Eleanor Singer

CHAPTER I

PRIMITIVE BOATS

SO MUCH HAS been written during the last thirty years on the real significance of sea power in the history of modern civilization that no one—and surely no one who lives in the British Isles—is likely to forget the fact that the sea forms the great highway of the world. But it is not so generally recognized how vast a part ancient mariners played in building up civilization itself and spreading abroad throughout the world the rich cargoes of new ideas that stimulated peoples in outlying regions to pursue the hazardous pathway of what we call progress. Such islands as Crete and Cyprus, Sicily and Sardinia, Japan, the Malay Archipelago, New Guinea, Australia, and the far-flung isles of Oceania could not even have received their original inhabitants until some sort of vessel had been devised to convey human beings across the water.

This implies in the case of Australia that even the most primitive of existing peoples had to traverse the ocean—even if it was nothing more than the gap between Borneo and Celebes now known as Wallace's Line—before they reached their present home. How long ago that happened we cannot even conjecture. But a far more potent

influence has been exerted by seamen than merely transferring people from one country to another. They have carried the germs of civilization and planted them on hitherto uncultivated coastlines, and they have brought to the centres of progress new materials and new ideas for the further development of arts and crafts, of customs and beliefs.

In this little book I propose to examine certain aspects of the history of maritime enterprise—in particular the evidence provided by survivals of ancient phases of shipbuilding—that shed light upon the wanderings of Ancient Mariners and their achievements.

I. The Dug-Out Canoe

The first steps in the history of navigation are still largely conjectural. The earliest and most primitive form of sea transport may have been the solid log which eventually became transformed into the dug-out canoe. The simple log survived until recent times as a means of navigation in several outlying parts of the earth. Pointed logs have been reported among certain of the aboriginal peoples of North Australia, and they were used by many North American peoples in crossing rivers.

We do not know how and when a shaped log was first hollowed out to make it more seaworthy. The dug-out canoe has a wide geographical distribution, and varies from a rough, slightly hollowed log to a large and finely decorated boat many feet long. We are so ignorant of its history that it is

impossible to say whether it has been independently produced in different areas. In some places, however, there is fairly conclusive evidence that it was introduced from without. In North Australia it was introduced by the Malays, while the more elaborate outrigger canoes of the Queensland coast are copied from those of the Torres Straits and New Guinea.

Several methods are employed in various parts of the world to hollow out the tree trunk from which the dug-out canoe is built. In his memoir on *Early Modes of Navigation*, General Pitt Rivers (A. Lane Fox) gives details of processes employed by North American Indians in hollowing a dug-out by the use of fire. Columbus discovered canoes constructed by similar means in the West Indies, and, indeed, it was their local name 'canoe' that has since been adopted by Europeans to describe any long and narrow boat.

The dug-out canoe has survived on the White Nile and the West African coast, throughout the shores of the Indian Ocean, the Pacific Islands, the Pacific coast of Asia, the adjoining north-western coast of America and the South American continent. In some of these areas, canoes are excavated with adzes of shell or stone after the wood has been softened with boiling water. Two precisely similar processes of this kind are reported from districts as far apart as Burma in Asia and British Columbia in America. The prehistoric peoples in Europe from at least as early as the time of the Swiss lake dwellings (about 1500 B.C.) built dug-out canoes. Similar vessels have been recovered from

marshes and river-beds in Britain, but so little is found with them that as a rule their age cannot be determined.

In south-eastern Asia, the dug-out canoe has been made more seaworthy by the addition of outriggers—floats built out on booms from the canoe to increase its stability, especially when fitted with a sail. This development probably originated from the practice of lashing two canoes together to make a double canoe. It seems probable that one of the elements in the double canoe became smaller and smaller and degenerated into a float, converting the vessel into what we call a single outrigger canoe—a form carried far and wide from India to the Pacific. To give still greater stability, particularly for heavy vessels, the idea of fixing two outriggers was developed in the Malay Archipelago soon after the Malays moved into the region. The Polynesians, who may have been driven into the Pacific by the invasions of these mongoloid Malays, took with them only the single outrigger. The double outrigger was carried back to the West by the Malays and survives to the present time in Madagascar and the neighbouring coast of Africa.

In both the Malay Archipelago and the Pacific, the capacity of the dug-out canoe was greatly increased by heightening the sides with planks or top strakes. The number of top strakes increased later on and the dug-out foundation, proportionately smaller, remained only as a keel-like basis on which the boat was built up. Many examples of boats showing varying degrees of atrophy of the dug-out portion can be seen in the Indian Ocean

and the Pacific, but we know very little of the time and place of these developments.

Although we cannot say how and where the momentous invention of the dug-out canoe was made, we can be fairly certain that, invaluable though it is to many peoples, it is not the only root of development in the history of shipbuilding. We have also to consider other primitive vessels which may give us clues to the history of boat-building and to early sea routes.

II. *The Wood-Raft*

The notion of constructing a raft of tied logs—apparently a more obvious device than the building of a dug-out—has a very distinctive distribution, suggesting that it does not occur readily to every people. The history of the raft has recently been studied by a Japanese writer who wished to know more of the origins of the old boat forms and sailing legends of Japan. Both of these point very clearly to the great importance of the raft in the early history of his country.¹

He has been able to link together a whole series of wooden rafts extending across Asia from their probable home in Mesopotamia. The ancient Babylonian *kellek*, which has survived practically unchanged into modern times, was a wooden raft often built up of several layers of timber and made more buoyant with inflated skins. *Kelleks* can be seen floating down to Baghdad at the present time.

¹ Shinji Nishimuru: *Ancient Rafts of Japan*, Tokyo. 1925.

They are built in the northern country, loaded with merchandise, and steered down the broad stream of the Euphrates. On arrival at their destination the rafts are dismantled, the timber sold, the skins deflated and packed on the backs of asses which have in some cases come down aboard the raft. The raftsmen return north by road.

Apart from the circular wicker-work and pottery coracles, this clumsy *kellek* is the only native craft of which we have any record in Babylonia. It seems to have been the typical form of vessel from the time of our earliest records. The absence of any testimony to the development of ship-building in Babylonia—in striking contrast to Ancient Egypt—suggests that this raft form was found adequate for river work and that the Babylonians contributed little to the evolution of the true ship. There are quite early references to transport by water. We have no actual representations of the Mesopotamian raft before those in the bas-reliefs of Sennacherib's temple.

Rafts equipped with inflated skins are still used in Upper India, and seem to have been still more common in the past. Related forms are also found scattered spasmodically in Indonesia, on the north-west coast of Australia, and in the Pacific, while a highly significant raft, the *jangada*, which Nishimuru connects with Asiatic forms, is found as far away as the Pacific coast of South America.

But the most striking and extensive use of the raft is found on the river-ways of the Asiatic interior. It is difficult to account for the almost exclusive preference for the raft in olden times on

such rivers as the Volga, Obi, Yenesei, Lena, and Amur unless we relate it to the dominant influence of Mesopotamia throughout long centuries in the lands of inner Asia. Right across the huge Asiatic continent to Korea, the source of so much of Japan's early culture, related forms of raft have survived until recent times as the chief means of river transport. The buoyant rafts of Korea are the parents of a large series of wood-rafts in Japan. The earliest of Japanese legends refers to a vessel, 'the Floating Bridge of Heaven', which bore to the islands the brother and sister gods, Izanami and Izanagi, who, according to the ancient legend, created the people and civilization of earliest Japan. This myth refers to the arrival of people in a vessel of raft-like construction and probably preserves the record of the first colonization of Japan by civilized men from the Asiatic mainland, sailing in Korean rafts.

Although some of the more elaborate of the Asiatic rafts have roughly built up sides, like the flat-bottomed boats of the Maldivé Islands, they, no more than the dug-out, provide complete prototypes for the well-constructed vessels which we know were sailing in the Mediterranean and Red Seas more than two thousand years before our era. A still frailer vessel, one that survives to-day over widely scattered areas, seems to have played a great part in determining the form of the graceful Egyptian vessels of the Old Kingdom, and of early Aegean boats. This is the reed canoe, the Memphite bark described by Isaiah in the Old Testament.

III. *The Reed Float*

In book after book on the history of ship-building, it is stated that the main lines in the history of shipbuilding were laid down in Egypt during the early Dynastic period, more than five thousand years ago, when the reed float was being gradually elaborated into the ship as we know it. It is therefore of great importance that we should understand the qualities of this frail vessel and seek its survivors. The Egyptian *baris* was a canoe of distinctive design, constructed very simply of water plants or osiers bound together with bands made of stalks of the common papyrus. While affording adequate width and bulk in the middle, the ends of this shallow float tapered and pointed up symmetrically at prow and stern (Fig. 2, i and ii).

These Egyptian 'papyrus' floats have survived in their undeveloped form until modern times. They are represented over the whole range of Egyptian history, and their extraordinary similarity to reed floats surviving in far-distant areas has often been remarked. Lane Fox (Pitt Rivers), an early but cautious inquirer into the history of navigation, was greatly impressed by these facts. 'The earliest and simplest of these papyrus vessels . . . is not, perhaps, one of those coincidences which . . . we should select as evidence of connexion between distant lands. And yet there are peculiarities of form which make the bulrush float of the Egyptians worthy of comparison with those used in the rivers of Australia.' The Australian float, which was used extensively on the rivers of South and West

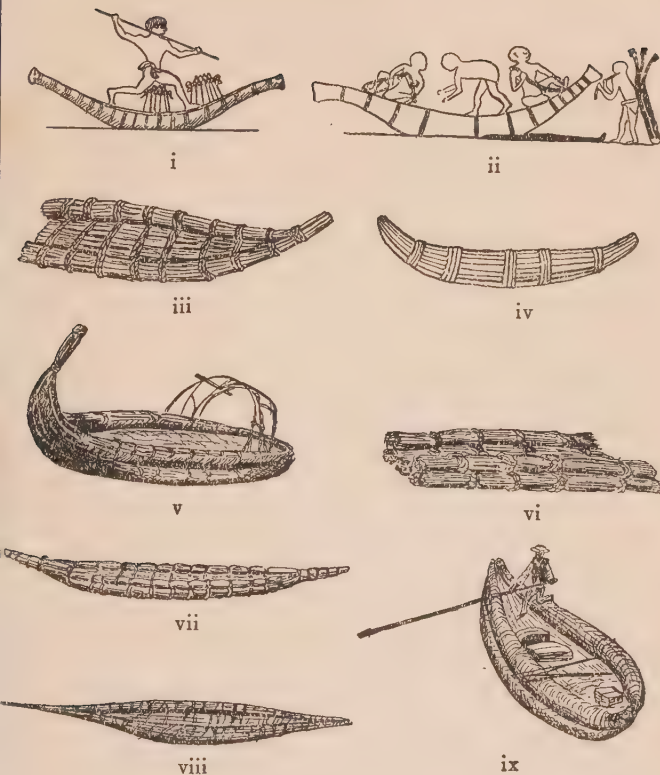


FIG 2. REED CANOES

- (i) Egyptian Reed Canoe. (ii) Tying a Reed Canoe—Egypt.
 (iii) Ambatch Canoe—Upper Nile. (iv) Assyrian Picture of Reed Canoe. (v) Reed Boat on Lake T Chad.
 (vi) Korean Reed Raft. (vii) Australian Reed Canoe.
 (viii) Seri Indian Canoe—California. (ix) Peruvian Balsa—Lake Titicaca.

Australia, consisted of a bundle of bark or rushes pointed and elevated at the ends and bound round with girdles of the same material. Some are built up at the sides with smaller bundles of reeds acting as gunwales which render them more seaworthy (see Fig. 2, vii). A similar float, constructed of the soft and buoyant bark of the swamp tree, was used on the west coast of Tasmania.

But the reed float is reported from many places intermediate between the Nile and Australia. Typical Egyptian floats appear in Mesopotamia several centuries before the Christian era (see Fig. 2, iv). On the Upper Nile and the Great African Lakes papyrus floats, or imitations in spongy wood, are a common form of water transport at the present day. On Lake Tsana in Abyssinia, and in the Egyptian Sudan, the same forms are found. On Lake Tchad in the south-western Sahara an elaborate reed canoe of considerable size is still in use. It has all the features of an early Egyptian boat (see Fig. 2, v). In Persia, Sven Hedin found on Lake Hamun small reed floats that closely resemble Nile canoes.

The most astonishing examples, however, are found in the New World. The Seri Indians of California have a reed canoe, the general form of which, and in particular the tapered ends, bear the closest resemblance to the type found in the Old World (see Fig. 2, viii). As in Australian and African and especially the Egyptian examples, two smaller side bundles are added to build up the sides. It is known elsewhere in the western United States, and in Peru an elaborate reed boat, obviously developed

from the float, bears men and cargo across Lake Titicaca in the heart of the old Peruvian Empire (see Fig. 2, ix). This boat—the *balsa*—equipped with a square mat sail suspended from an A-shaped mast, is generally from twelve to fifteen feet long, but the largest are said to reach seventy feet in length with a breadth of twenty feet. The use of a sail was very rare in pre-Columbian America. The wood rafts—*jangada*—of the South American coast, which I have already mentioned, were also fitted with a square sail on an A-shaped mast. Both the square sail and the A-mast are archaic forms in Asia, and their association in Peru with the reed canoe strengthens the suggestion of Asiatic origin.

These frail buoyant craft—one hardly knows whether to call them floats, canoes, or boats—are curiously similar the world over, although the materials of which they are constructed may be very varied. Any attempt to trace contacts of peoples in the past through similarities in their arts and crafts has always to face the difficulty of being unable to prove the significance of such similarities to those who would more readily assume the chance achievement of precisely similar results in widely separated areas. But the distribution of these survivals is curiously limited and they have all the appearance of links in a chain. The closeness of contact between Egypt and Mesopotamia throughout ancient times gives us confidence in regarding the Mesopotamian canoes, which make their appearance only at a late period on Assyrian bas-reliefs, to be of Nilotic derivation.

Out from Egypt and Mesopotamia, a series of these reed craft have survived as straws on the seas and waterways of southern Asia to indicate the cultural drift of early times. In Persia, India, the Maldives, Australia, Tasmania, and Japan, these frail vessels testify to the long survival of early methods of navigation, and we shall discuss later whether mere distance should prevent us from linking to these the reed craft of the New World. Southwards and westwards from Egypt the reed boat has penetrated to survive to the present day, as we have seen, on the upper waters of the Nile, the great Lakes of the Central African plateau, and Lake Tchad in the western Sudan.

It is not suggested, of course, that the reed boat represents the sole maritime equipment of any one people who rapidly covered the oceans of the world. The process of diffusion was probably chequered and slow and may have taken place very early in the history of man. The idea of a reed boat may also have been introduced into many areas by people who had far larger and more seaworthy craft for journeys on the open ocean. What is implied, however, in the distribution and similarity of these survivals is that even so apparently simple an element of human culture as a reed canoe has behind it a long history of propagation, and that the postulation of such a process of spread is the most reasonable and complete way to account for its present distribution and similarity of form in widely separated areas.

CHAPTER II

THE EVOLUTION OF THE SHIP

THE DEVELOPMENT of the plank-built ship and its relation to the reed canoe is traceable in Egypt through a series of pictorial representations and ancient models extending over a long period of time. A picture from the tomb of the Pyramid Age (*c.* 2500 B.C.) shows the actual process of tying in position the bundles of a reed canoe (see Fig. 2, ii), and numerous tomb paintings of this and other periods show the reed boat in use for hunting, fishing, warfare, and religious rites. Everywhere it has the same features of shallow draught and symmetrically upturned prow and stern. In the larger examples the ends often sag down towards the water. Similarity of design makes it clear that boat pictures of far greater antiquity—the decorations on Egyptian pots of the pre-Dynastic period, *i.e.* earlier than 3400 B.C.—are also representations of reed-built craft, or of boats developed from them (Fig. 3, i and ii). These boats are represented as long, shallow craft with upturned ends. In the bow is a tree branch as a shade for the look-out; amidships are two cabins, sometimes connected with a flying bridge. To the rearmost of these is fixed a pole bearing an ensign such as the harpoon, the falcon, the crescent, or a fish. Many of these signs survive into the historic period when their significance can be determined and the provenance

of the boats surmised. The recurrence of the same ensigns in pictures of boats in the ancient Aegean is further proof of early contact of that region with the ancient Nile (Fig. 3A, ii and iii).

It has often been denied that these designs are boats. They have been variously claimed as forts and ostrich farms! But the specific character of their equipment exactly fits the nature of a ship, while their symmetrical form is precisely that of the papyrus canoe so well known at a slightly later period in early Dynastic times. The reason for these doubts lay in the large number of straight strokes running out from the sides of the boat. These obviously represent the oars or paddles of the canoe, and in some cases the blade at the end is clearly indicated, but because they are so numerous in proportion to the size of the other fittings, alternative explanations, however fantastic, have been sought. All doubt as to their character is dispelled by a drawing of one of these boats as seen from above, which appears on a shallow pre-Dynastic bowl. The roofs of the square cabins and the branch at the prow are clearly shown, and oars with large triangular blades project from the side of the ship.

We have no direct evidence that these boats were constructed of reeds, and their considerable size suggests that they were of some more rigid material. This belief is somewhat strengthened by the occurrence of model boats in pottery, of which Sir W. Flinders Petrie says: 'They were evidently not mere reed floats as they are thin and well deepened inside. Nor were they dug-outs, as the

separate parts are clearly shown. The lines suggest longitudinal ribs with narrow strips running from side to side. The material is not obvious.'

The influence of the papyrus boat in the form of this vessel is, however, undeniable in the symmetrically upcurved prow and stern, and this tradition survived late into the history of Egyptian shipbuilding long after the reed canoe had become a toy. A boat picture of early Dynastic times shows a craft of considerable size, the prow and stern of which sag heavily, as would be expected of a rush-built boat. Its design and proportions are those of the pre-Dynastic pictures. This feature and the use of the verb 'to tie' meaning 'to build' a boat are significant as indications of the continuity between the papyrus canoe and the wooden ship, which was also assembled at one time by tying together the strips which went to build up its sides. The pre-Dynastic vessels were probably not restricted to use on rivers. Flinders Petrie is of the opinion that 'the use of a great number of oars is in favour of sea traffic. On the Mediterranean in all ages rowing vessels have been the most dependable vessels. . . . On the contrary oars are useless on the Nile, as the stream can only be overcome by wind power, and oars only appear for crossing the stream or rarely for aiding descent on the current.'

Even in pre-Dynastic times the Egyptians were using the sail. A pot found at Abydos shows a boat equipped with a large square sail (Fig. 3, iv). This ship differs from the usual pre-Dynastic boat in having very high ends which rise up vertically. This feature occurs again in the wall paintings on

the late pre-Dynastic tomb at Hierakonpolis where figures of boats of both types occur (Fig. 3, iii). On the handle of the famous proto-Dynastic flint knife of Gebel el Arak they are also found together.

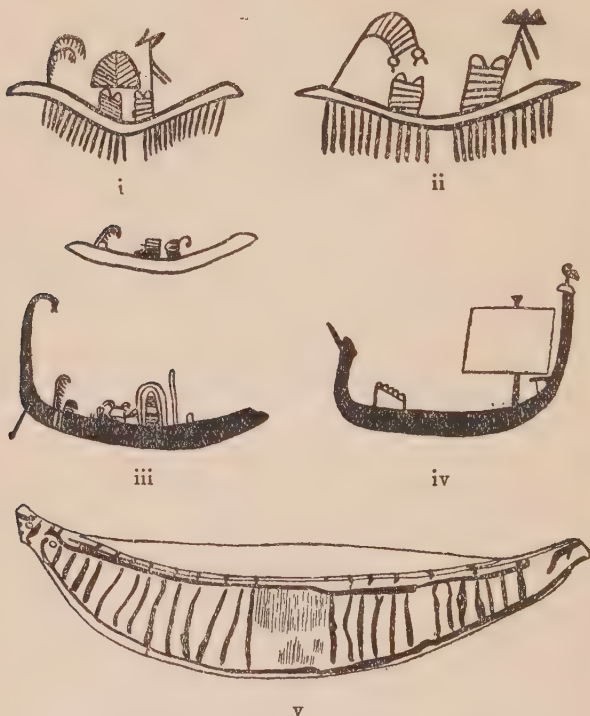


FIG. 3.—PREHISTORIC BOAT PICTURES IN EGYPT

- (i) and (ii) Boat Designs on Pre-Dynastic Pottery. (iii) Boats in the Wall-paintings of Hierakonpolis. (iv) Sailing Ship on a Prehistoric Pot—Abydos. (v) Pre-Dynastic Pottery Model of a Boat.

It has been suggested that the high-prowed forms on the knife handle represent the ships of an invader, for despite the fact that the knife was found in Egypt and is a typical example of the finest Egyptian pressure-flaked flint, it has been the fashion to attribute an Asiatic origin to it. This assumption seems chiefly to have been made because the handle (which it is important to remember is made of African hippopotamus ivory) shows two rampant lions (also African) heraldically opposed. The motif of heraldically opposed animals was undoubtedly popular in Mesopotamia at a later date, but this is no evidence of Asiatic invasion in the pre-Dynastic period. Heraldically opposed animals are also found elsewhere in pre-Dynastic Egypt—serpents on an ivory knife handle and the same ‘man with lions’ motif on the wall paintings of the early tomb at Hierakonpolis.

But the forms of these high-ended boats themselves attest their local development, for one at Hierakonpolis is of the ordinary pre-Dynastic form in all its details, but for the addition of a high vertical prow—it has the double cabin and flying bridge, the ensign standard and the branch at the prow. Still more striking, one of the boats on the Gebel el Arak knife handle has as its ensign a ball within a crescent which occurs on the boats of the decorated pottery. Although we cannot know anything of the conditions under which it took place we have here a very clear record of the development of a new form of boat which was well suited to early ocean navigation.

There is moreover the most definite evidence that the Egyptians were capable in the early Dynastic period of building cargo boats of great strength and stability. The great developments in architecture during the early dynasties created a demand, even a necessity, for navigable floating structures in the transport of stone and timber. In Lower Egypt magnificent tombs and temples were being constructed near the ancient city of Memphis. But the source of the granite from which the huge building blocks were carved was over 500 miles away close to the first cataract at Aswan. Even if we had no other evidence to guide us, the transportation of the fifty-ton blocks of granite to the Pyramids at Giza compels us to admit the skill of the Egyptians in the art of inland navigation, for these masses were conveyed by water over this 500-mile journey from the quarry to the building site.

We do not know how and when wood came into use for the building of boats in Egypt. One of the most direct ways in which the built-up boat could develop would be by top-straking a dug-out canoe. We have seen that this method is widely practised in the Pacific and there are canoes of the same type in Africa and America. As the top-straked portion is developed the dug-out foundation becomes proportionately smaller and sometimes atrophies to a shallow log keel on which the entire walls of the boat are built up of planks. Such a boat can of course be made with far smaller timber than the simple dug-out. A massive tree trunk is no longer needed. In Egypt the great

difficulty which exercised the ingenuity of early shipwrights was the lack of suitable large timber, and we know that, even in later times, boats were often built with very short planks from the indigenous acacia (*sûnt*) tree fitted together with great skill. The Egyptians were making the dug-out canoe at least as early as the Old Kingdom, for pictures in their tombs show small boats being hollowed out with adzes. But the strongly upcurved prow and keel, which, as I have already shown, follow closely the lines and proportions of the reed canoe, make it clear that the simple dug-out, which is necessarily flat and shallow, can hardly have been used for their larger ships.

There is the further possibility that the plank-built boat first developed by raising and upcurving the side logs of a raft. The Egyptian boat was always of shallow draft, with no deep keel. I have already mentioned that curved raft-like vessels with sterns similar in shape to reed canoes are still being made on the Upper Nile of spongy ambatch bundles. Other curved raft forms are reported from India, Formosa and elsewhere. In certain African boats from Victoria Nyanza logs are used as the foundation of the vessel. Sometimes only one, hollowed like a dug-out, is employed, but quite frequently several slender logs are bound together and warped to form a curving keel. Both in shape and decoration these vessels are very close to Egyptian forms and may well preserve the actual technique employed in ancient Egypt, so that it is interesting to find both the hollowed log and a raft-like bundle of warped logs used for

laying the foundations. The upcurved keel of the Nyanza boats generally projects beyond the prow of the top-straked hull and forms a kind of ramming

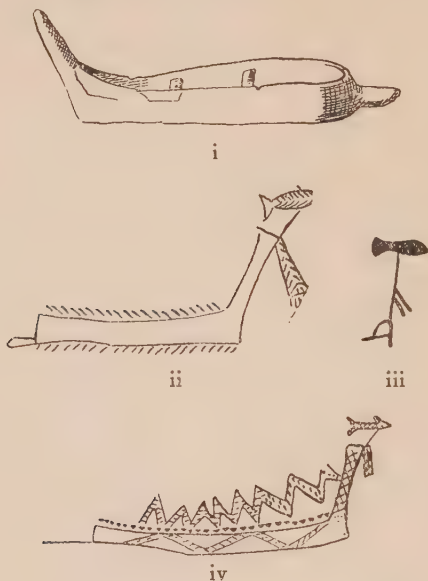


FIG 3A.—EARLY AEGEAN BOATS (*after Evans*)

- (i) Cretan Model Boat (Palaikastro E.M.I.) (ii) and (iv) Ship Pictures on Early Cycladic Pottery. (iii) Similar Fish Standard from Prehistoric Egyptian Drawing (Naqada).

beak or beaching apparatus (see Fig. 7, i). Many Phoenician and early Greek vessels as well as boats in ancient rock carvings in Scandinavia, to which I shall refer later, seem to have been constructed in this way.

The plank-built hull of these African boats, like that of the Ancient Egyptian ship, was often put together with very small pieces of wood. Herodotus describes transport ships on the Nile in the fifth century B.C. : ‘ They cut planks measuring about two cubits and having arranged them like bricks they build the boat in the following manner : they fasten the planks round firm long pegs, and, after this, stretch over the surface a series of girths, but without any ribs, and the whole is bound within by bands of papyrus ’. This account is somewhat obscure, but in the Pacific, as we shall see, ribless boats, constructed in this way on a dug-out foundation, are still being built.

Whatever the point of departure the earliest sewn boats were doubtless constructed without ribs. Later, vertical ribs were fitted to the interior of the hull. Rude models of such vessels have been recovered from the tombs of Thebes. A primitive form of sewn ribbed boat surviving in the Far East probably retains the first steps in this strengthening. The canoes of the Gilbert Islands and Fiji and the archaic *masula* boats of the Madras coast and river-ways are examples. In these early forms the ribs are added as an afterthought to strengthen a hull which has already been built up ; they are not firmly attached to the keel, and can be removed or renewed at will. An ancient plank-built vessel of this type, probably of the Iron Age, is known from the Baltic. Discovered in the Nydam Moss in Sleswig in 1863, its form curiously resembles that of the boats of the Ancient East, being ‘ seventy-seven feet long, ten feet ten inches broad in the

middle, *flat at the bottom, but higher and sharper at both ends*'. The vertical ribs in these boats were removable, each being carved out of one piece and tied by means of cords to the hull. But still more primitive features are reported as surviving until recent times in northern Europe. On the Norwegian coast, in Finland, in Lapland, and even in our own Shetland Islands, *sewn* boats were still being used a hundred or so years ago. Reports from the seventeenth and eighteenth centuries describe the Finnish boats as being about twelve feet long, of fir planks sewn together with reindeer sinew, birch bark, or the root of the fir.

In the sixteenth century a regular traffic was being carried on between the Red Sea and India in ships built of planks sewn together with thongs and cords. Many writers from the first century onwards have placed on record the use of such vessels at various places along the southern coast of Asia from the Red Sea and Persian Gulf to the Malabar coast, Burma, Siam, and Indonesia. The present day *madarata* of southern Arabia are sewn boats which, as their name implies, are fastened together with palm fibres. Bent refers to their long, pointed bows elegantly carved and decorated with shells. Similar vessels are also used by the pearl fishers of the Bahrein Islands in the Persian Gulf and it is significant that boats of this type also decorated with shells are found in the islands of the Pacific, where the searching after pearls and pearl shell is most obtrusive (see Chap. VI). The ribless *gay-yu*, the fishing boats of Cochin China, are of the same type and have

rowing benches piercing the hull in the same peculiar manner as the famous boats of Queen Hatshepsut of the Eighteenth Dynasty in Egypt.

By the Middle Kingdom in Egypt two further advances had been made in the development of the hull. True ribs firmly attached to the foundations of the boat were used as a framework on which the planks were built up. The planks themselves were by this time being attached to one another by pegs. We cannot tell how early these methods were introduced, as the representations of Egyptian ships are often conventionalized and give us little information as to the details of construction.

Of the rig and general equipment of Egyptian boats little need be said here, as I shall describe certain ships in a later chapter, but one or two points deserve mention. We have already seen in the vessel on the Abydos pot that from the earliest times the mast is placed well forward and equipped with a square sail slung from a high cross-piece. In a close study of the ships of classical times Mr Torr states: 'In every age and every district of the ancient world the method of rigging ships was substantially the same; and this method is first depicted by the Egyptians'. He also shows that several features which developed in the evolution of shipbuilding in Egypt were also imitated later in places where the factors prompting their use no longer existed. The lack of yards in the Egyptian ships of the Old Kingdom finds explanation in the curious double, or A-shaped mast, developed during the later part of this period.

When a single mast came to be used in still later times 'mere force of habit kept the Egyptians from adding shrouds. . . . Each yard was formed of two spars lashed together so as to avoid the waste of timber in tapering the thicker end of a single spar to balance the thinner end; and this device was adopted by the Greeks and Romans . . . and thus transmitted to the modern world'.¹ The Phoenician ships of 1000 to 700 B.C. were built on Egyptian lines and show similar arrangements for working the yards and taking in the sail. Elements from all parts of the eastern Mediterranean were incorporated in the Phoenician ship and these served for imitation east and west, producing the oft-noted uniformity of design in the vessels of classical times. The square sail slung from a forward mast is found to-day in many corners of the Asiatic littoral extending as far to the north-east as Japan and the sea of Okhotskh in the north-west Pacific.

One highly important feature of the early ship remains for consideration. This is the method of steering. Primitive boats all over the world and the pleasure canoes on our own rivers are guided through the water by a paddle little different from, and sometimes the same as, that used for propelling the boat. The development of the median rudder with which we are so familiar on all craft from rowing-boats to majestic liners provides an interesting story in invention. It demonstrates the difficulty and slowness with which men arrive at apparently simple devices. I have already pointed

¹ Cecil Torr: *Ancient Ships*, p. 78.

out that long paddle-like objects are shown at the stern of many of the vessels painted on the pre-Dynastic vases of Egypt. The position of these paddles suggests that they were used for steering. The models and representations of the Old Kingdom show that this was the method still employed by the Egyptians on their boats of this period. Egyptian boats of the Third Dynasty are steered from the quarter by two men with long steering paddles. These paddles are unattached to the hull. In the Sahuré ships of the Fifth Dynasty three such paddles are used. In the pictures they are hoisted clear of the water as the ships are at rest (Fig. 1, see p. viii). No attachment to the hull is shown but they may have been prevented by cords from falling overboard. Their travel is limited by the lattice-like construction which encloses the stern of the boat. Other Old Kingdom representations show the steering paddles equipped with a fulcrum on the hull to which they were lashed. Free steering paddles operated from the quarter survive to-day in many parts of the Far East. The state barge of the King of Siam, a vessel which would be expected to retain archaic features, is directed in precisely this manner by two men with long steering paddles. There are many other examples, apart from the innumerable dug-outs of the Indo-Pacific region.

During the prosperous period under the Theban rulers of the New Kingdom in Egypt a great advance was achieved. This is exemplified in the ships of Queen Hatshepsut, whose voyages we shall discuss later. Paddles are secured on either

quarter, fixed at two points so that they can only be rotated in their sockets (Fig. 4). The oar has become a real rudder. A tiller attached to a shaft is held by the helmsman who stands on the quarter. Like the steering paddle the quarter-rudder became adopted far and wide. This, the

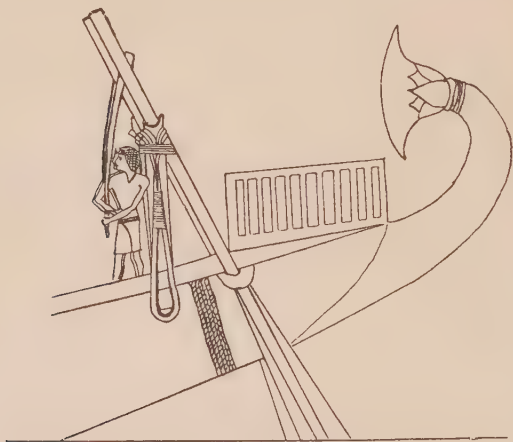


FIG. 4.—STEERING GEAR OF QUEEN HATSHEPSUT'S SHIP

true balanced rudder, first became established in the Twelfth Dynasty (2200 to 2000 B.C.). It remained the standard form throughout the classical world and was in use until the fourteenth century. The modern fashion of slinging the rudder in a median position on the stern-post of the vessel, which seems to us an obvious procedure, was not well known in Europe until it

came into use on the great merchant galleys of Venice, although there are representations of median rudders a century earlier on the Seals of Ipswich and Poole. As Warrington Smyth points out, the median rudder made possible for the first time a great increase in tonnage. It does not seem, however, to have been discovered by any of the innumerable shipwrights in the great Mediterranean harbours of this time, who might have been expected to arrive easily at such an invention. On the contrary the introduction of the stern-post rudder coincides with the time when Chinese mariners first began to make their appearance in western waters. It is at present difficult to determine whether the modern rudder came directly from the Chinese, but we know that they had adopted the stern-post position at a much earlier date. It is therefore very probable that its adoption in Europe was related directly, or indirectly through the medium of Arab traders, to the Chinese model. Once introduced into Europe its superior qualities led to its rapid spread and within a short space of time the old-fashioned quarter-rudder had almost completely disappeared. A median paddle-shaped rudder with two attachments is shown on a model of an Egyptian ship discovered in a Twelfth Dynasty tomb. There are also records that the free steering oar was sometimes placed in a median position projecting back from the stern, so that the central idea had been anticipated two thousand years before our era. But the development of the swivelled quarter-rudder seems to have ousted it

in early Egypt. At that time the ship had not attained so great a size that the advantage of the median rudder was obvious. Moreover, as Dr Harrison has pointed out to me, until a square stern, or at least a vertical stern-post, had been developed, the median rudder was by no means easy to handle.

The history of the steering of ships is one of slow and spasmodic improvement interrupted by long periods of stagnation. Each new development seems to have been made in one place, to be copied far and wide as ships equipped with the superior rudder moved out over the waters of the earth.

CHAPTER III

THE SHIPS OF SAHURÉ AND QUEEN HAT SHEP SUT

I. The Cedars of Lebanon

ONE OF THE EARLIEST fields of Egyptian seamanship was the sea which we know to-day as the Levant, and the objective the famous coastlands of Phoenicia. The Egyptians are the first recorded voyagers on these keel-ploughed waters. Harbours later renowned to Phoenician, Greek, and Roman witnessed the arrival of Egyptian boats thousands of years before the later glories of Tyre.

Egypt, rich in crops but poor in timber, sought the so-called 'cedars' of Lebanon which frowned over the waters of the Levant. Snefru, the last

king of the Third Dynasty (c. 2900 B.C.), sent a fleet of forty ships to the Lebanon for supplies of 'cedar wood'. We do not know at present whether timber was the sole or even main attraction of this coast. Syria was probably known to the Egyptians before the Dynastic period and it seems probable that the wheat plant was brought into Egypt from this same country to supplant the long grown Egyptian barley. Syria has been identified as the country in the old Osiris legend whither Isis set out in search of the dead king's body, and in the very port—ancient Byblos—which is thus associated with Osiris, an early Egyptian temple has been discovered.

But the magnificent cedars that crown the Mountains of Lebanon cannot have been the much prized timber that the Egyptians sought in Syria. Perpetuating an ancient misconception we speak of the 'Cedars of Lebanon', but actually the wood of the *cedrus libani* is of very little use. It is very soft and liable to shrinkage. The cedars are found, moreover, near the summit of the mountain slopes. There was nothing to induce early foresters to ascend some six thousand feet over rocky country when other and far more valuable trees clothed the lower slopes of the Syrian highlands. The Cilician fir and juniper have horizontally spreading branches which give them a resemblance to the cedar. The timbers of these trees were the real forest riches of Syria. These were the woods which the Egyptians valued so highly. The sacred boats of the Egyptian gods and kings were always constructed of wood from the Lebanon

conifers. Timber from this region was arriving in Egypt as early as the First Dynasty, before 3000 B.C., and Newberry notes that the Egyptian name for a sea-going ship was *kbnyt*, from Keben (Byblos) the port of the Lebanon whence the timber and often the ships themselves must have come. An early Egyptian record, *The Admonitions of an Egyptian Sage*, written during a period of disorganization and internal strife about 2000 B.C., laments: 'Men do not sail northwards to [Byb]los to-day. What shall we do for coniferous trees for our mummies, with the produce of which priests are buried, and with the oil of which [chiefs] are embalmed as far as Keftiu? They come no more.' The resins of these Syrian pines no less than the timber were the motive for this early sea traffic. As unguents and preservatives they played an important part in the central ritual of Egyptian burial—the embalming of the mummy. Here again everything points to contact with Syria at least as early as the opening of the Dynastic period in the Fourth Millennium B.C.

These scribblings, unwiped from the slate of history, have led some writers to ascribe a Syrian origin to Egyptian civilization. But there is much in early Egypt that Syria dreamt not of. We must beware mistaking the part for the whole. The history of the boat has shown us a long internal growth in Egypt years before the need for the better timbers of Syria was realized.

From the Fifth Dynasty (c. 2700 B.C.) we have a record of the ships used in voyages to Syria. These are carved on the tomb of Sahuré. This second

king of the Fifth Dynasty sent to the Levant an expedition which returned with many prisoners. Representations of these ships show a development continuous with what has gone before, but there are new fittings of importance (Fig. 1). An enormous rope runs from end to end of the ship over a series of forks to prevent the sinking or 'hogging' of the upcurved prow and stem. By means of a tourniquet, this 'truss' was twisted tight and the hull held rigid. Along the sides of the ship is what appears to be a fender. It consists of two ropes with a third between them wound in criss-cross fashion. This fender forms a design which is met later on Egyptian ships and may be the prototype of designs on the hulls of boats built in later centuries thousands of miles from Egypt. On the upstanding prow an eye is represented. The use of the eye as a design on the prows of Egyptian boats dates back to very early times. Its subsequent history will reveal a most remarkable story of diffusion along the early sea routes of the world.

But probably the most interesting feature of these ships of Sahuré is the double or A-shaped mast which could be lowered at will. Boats equipped with these runged A-masts were used in Egypt from the Third to the Sixth Dynasty, and are found occasionally until the Eleventh. After that they became obsolete. From many tombs of the earlier period models of ships equipped in this manner have been recovered. The method of construction is so peculiar, and the period of occurrence so limited, that their existence as survivals

elsewhere is of distinctive interest. Assmann, who has made a detailed study of the ships of Sahuré, notes the close similarity to the double mast used on the Burmese rice boats on the Irrawaddy. These old-fashioned craft are also similar in general build to early types of Egyptian ships, and they are built up of short planks without a keel. The Sahuré ships continue the Egyptian technique of plank-building without the use of stern-post, stem-post, or ribs. It is generally admitted that the original papyrus models and the lack of large timber were responsible for such a method of construction, which involves the most careful joining and lashing of a very great number of exactly fitting strips. At Dashur, several small boats about ten metres long were dug up. These have been assigned to the Twelfth Dynasty and although at least seven centuries later than the Sahuré ships show the same method of construction. Boats built in this fashion, the prototypes of which must almost certainly have been Egyptian, are found to-day on the Upper Nile near Khartoum and in Central Africa.

But these methods are not confined to Africa. The Arab *beden safar* boats of Muskat and the fishing boats of Cochin China, as well as innumerable Chinese junks, show similar features ; and the combination in the Burmese rice boats of both laddered A-shaped mast and ribless hull indicates clearly and definitely that Egyptian methods of construction were carried east at a remote period, perhaps between the Third and Fifth Dynasties (2900 to 2600 B.C.). Assmann mentions a 'unique

analogy' to the Burmese boats in a representation in the Egyptian tomb of Ojan (Twelfth Dynasty). The Sahuré ships are the only sea-going craft recorded from the Old Kingdom or Pyramid Age : all other representations seem to be those of river boats. They are not only of the greatest value in demonstrating the continuity of Egyptian ship-design from the early river boats to the magnificent ships of the New Empire, but they also suggest that from at least as early as the Old Kingdom Egyptian seamanship was beginning to spread eastwards through the Erythraean sea.¹ In a later chapter we shall consider the importance of maritime contacts on the early civilization of the South Asiatic Littoral.

II. The Voyages to Punt

By the time of Sahuré the Egyptian vessel had developed from its pre-Dynastic prototype into a fine sailing ship of elegant proportions, equipped with a large square-cut sail suspended from an A-shaped mast. Only by good fortune has this record been preserved to us. The ships of Sahuré are typical of many vessels built in Egypt in the Pyramid Age. There can be little doubt that by this time the Egyptians were skilled navigators, thoroughly familiar with the neighbouring waters of the Levant and the Red Sea.

The abundant evidences of Egyptian activity in the Aegean, including even drawings of ships of Egyptian rig and build from the early Cretan

¹ The classical name for the Indian Ocean.

(Minoan) civilization, and the discovery of an Egyptian temple dating from the Second Dynasty in the Levantine city port of Byblos, not only corroborate earlier inferences as to Egyptian influence in the Near East, but are also unassailable indications of the reality of early navigation in this region. The fact that Crete was equipped with a culture revealing the strongest Egyptian influence establishes the reality of such maritime traffic.

But very early in Egyptian history we also find references to a vague Southern land. This Land of Punt is described as a source of great wealth and riches. It is also called the Divine Land, a region of great importance in Egyptian mythology. Punt was apparently the goal of many early Egyptian maritime exploits in the Red Sea. Fortunately, we have a record from one of the most flourishing periods of Egyptian history which tells us much of the Land of Punt and describes an actual voyage to that land.

During the Eighteenth Dynasty (about 1500 B.C.), there ruled a queen, Hatshepsut, whose career is well known to us from the elaborate series of pictures and inscriptions on the walls of her temple at Deir el Bahari.¹ On the southern wall of the Middle Colonnade, two-thirds of which is unfortunately destroyed, are engraved a magnificent series of bas-reliefs. The carvings and inscriptions record the arrival of five Egyptian ships in the

¹ For a detailed record see Edouard Naville : *The Temple of Deir el Babari*, Egypt Exploration Fund, 1894, etc. The Introductory Memoir and Part III contain the material on the voyage to Punt.

harbour of what appears to be the mart of this southern land. The people of Punt are shown to be of similar 'Mediterranean' race to the Egyptians. A chief, his portly dame, and daughter, receive the Egyptian captain with great respect. Having feasted and received gifts, which to all appearances are worthless trinkets, the Puntites proceed to help the Egyptians load the riches of the South.

There have been many speculations as to the whereabouts of this Land of Punt. Undoubtedly the route to it lay down the Red Sea, and an earlier voyage to Punt in the time of Sankhkara of the Eleventh Dynasty seems to have set out from the age-old port on the Red Sea on the site of modern Kosseir to which the Wadi Hammamat leads from Koptos. The pictures of the Hatshepsut expedition make it quite clear that it lay in Africa, for the fauna consists entirely of African animals. There are cattle belonging to two different breeds, with short and long twisted horns, of which the latter is still common in Africa. It has been exported from the Sudan to Egypt from the times of the early Pharaohs down to the present day. The presence of the giraffe is decisive. African monkeys are also shown both in the village and aboard the loaded Egyptian ship. So that Punt, often described as a vague territory lying at either shore of the southern end of the Red Sea, is undoubtedly confined, in this record, to the African shore. Since Mariette first discovered these sculptures Punt has generally been identified as Somaliland. Naville is unwilling to believe that any part of it lay beyond the straits of Bab-el-Mandeb on account of the

curious legend that the Egyptians were bad sailors and because the Greek kings 'who belonged to a nation of seamen, who had fleets and knew how to handle them, never ventured so far'.

This attitude, which Maspero so forcibly attacked, has no foundation in fact. The Egyptian record of maritime activity is as rich in positive evidence of achievement as that of any other people of antiquity. We know far more of Egyptian technical procedure in shipbuilding than of that of any people of classical or mediaeval times. But the inveterate prejudice against which Maspero protested has been responsible for the assumption that the Egyptian people, because they lived in a rich alluvial valley and had, by classical times, withdrawn into a shell of stereotyped culture, had shunned the sea throughout the whole period of their history. Such a view completely ignores the fact that the cultural stream of classical times, when Egypt was a kind of China to the Ancient Greek and Roman world, had set in a direction entirely opposite from the currents of civilization which had stirred the seas of the Ancient East through the long millennia of the Dawn of History. Crete on the other hand, because of her island position, is admitted by all to have exerted a far-flung influence on the Mediterranean seas, although we know very little of her ships and are only beginning to trace out the cultural links for which she was responsible. It cannot be too strongly emphasized that almost the only positive records of maritime achievement before 2000 B.C. relate to the Egyptians.

The Punt of Queen Hatshepsut's expedition lay, then, on the African continent along, or to the south of, the Red Sea. References to Punt on other occasions make it abundantly clear that the coast of Arabia on the opposite shores of the Red Sea was also sometimes considered to form part of this land. It was a vague region rather than a territory of definite boundaries. This is the more probable since its great significance to the Egyptians lay in its resources of frankincense produced from the *sycamores of anti* which the Egyptians prized very highly. The frankincense *anti* was undoubtedly the main object of the expedition of Hatshepsut. We see the *anti* being gathered. Great heaps of it are being measured out in the pictures representing the return to Thebes. Whole trees are carried aboard in Punt to be replanted in the garden of the god Amon after the return. With the frankincense were collected stores of ebony wood, gold, and ivory, African monkeys and hunting panthers.

But the treasures brought back do not seem to have been entirely the produce of Punt itself. Reference is made to the district of Ilim in the great country of Khent Hunnefer, extending over Abyssinia and the Upper Nile. The negroes shown in the picture may represent some of the bearers of the inland riches—the cattle (still to-day recognized as superior to the Egyptian), the giraffes, baboons, and ivory.

The five ships shown in the picture of the expedition are all alike in construction, but are shown in various conditions. 'We see them sailing and rowing at the same time, rowing with sail

lowered, and lying close to the shore loading cargo. . . . In a general way there is not very much difference between these ships of Hatshepsut and those of Sahuré, a thousand years earlier. The shape of the hull is essentially the same, and it is strengthened with a rope truss in the same way. [But] in details, there are many changes to notice [Fig. 5]. One of the most striking is that the double mast has been replaced by a single spar which seems to be lashed in place in some way. There are two stays and a single back stay while the two halliards are also taken well back towards the stern. . . . Both the yard and the boom are made of two pieces lashed together, a practice that still survives in ships of the Mediterranean and Red Sea. . . .¹

Reference has already been made to the fact that the steering gear of Hatshepsut's ships shows a great advance on the times of Sahuré. It is no longer an oar or paddle, but a true rudder, although the evolution of form towards the modern style, in which the blade is wholly behind the axis of rotation, has not yet begun. On one of the vessels we see the helmsmen at their posts grasping the tillers which manipulate the looms or rudder posts. These are secured in two places, to the side of the ship and to posts rising well above the side and further forward. Parallels to this form, which continued in use for many centuries, survive throughout the world of ancient ships.

It is difficult to estimate the size of these vessels, for the human and the animal figures are of varying

¹ R. and R. C. Anderson: *The Sailing Ship*.

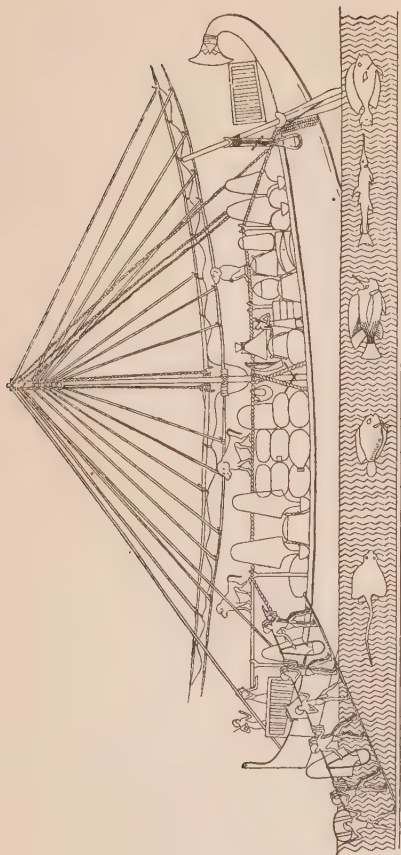


FIG. 5.—QUEEN HATSHEPSUT'S FLEET LOADING FRANKINCENSE IN PUNT

After Naville

[Drawn by Eleanor Singer

and uncertain proportions. The ships of Sahuré were probably only sixty feet long, but these are estimated to have been over eighty feet. We have a surer guide to the scale of Egyptian shipbuilding in another scene in the Temple of Deir el Bahari which shows the transport of two great obelisks, each larger than 'Cleopatra's Needle' and about a hundred feet long. The much damaged inscription says: 'Trees in all the land to build a very great boat enlarging . . . to load two obelisks at Elephantine'—the island harbour of the quarrying country at the First Cataract. As these two great obelisks were carried end to end on one boat, and as a great part of the hull at both stem and stern is out of the water and bears no weight, the ship must have been at the very least three hundred feet long. The boat used is of the same general shape as the ships which went to Punt and no less than thirty rowing boats were used to haul it down the Nile.

Until the time of Hatshepsut's expedition incense seems to have been brought overland to the Upper Nile by 'the people of Punt and God's Land' and little sought by the Egyptians themselves. Under Sahuré there was an expedition to the Incense Land, but we have no details of its scope. Until the Eighteenth Dynasty the Egyptian palaces and temples were probably supplied by Arab merchants and the peoples of the Upper Nile. The expeditions of Hatshepsut and other rulers of the Theban Dynasty were great advances, or revivals, in Egyptian enterprise at sea. Hatshepsut says of the Land of Punt that in the past 'no one trod the incense terraces, which the people

knew not ; they were heard of from mouth to mouth by hearsay of the ancestors. The marvels brought thence under thy fathers, the Kings of Lower Egypt, *were brought from one to another* and since the times of the ancestors of the kings of Upper Egypt, who were of old, *as a return for many payments* ; none reaching them except thy carriers.' Of the fruits of her expedition she claims : 'Never was brought the like of this for any king who has been since the beginning . . . heaven and earth are flooded with incense ; odours are in the Great House.' Hatshepsut traced the treasures once again to their source and freed them from those 'many payments'.

CHAPTER IV

BOATS' EYES

IN MANY out-of-the-way parts of the world, on long-sequestered coasts and lakes, there survives a curious custom that has much to tell us of the early history of shipping. On some of the most deserted waterways and coasts of India, boat-builders are in the habit of painting an eye on the prows of their craft. Some writers pretend that such a practice is not surprising but perfectly natural. The seaman simply treats his boat as a living thing and equips it with eyes to see, to guide it magically on dangerous waters and bring it safely to the end of a tortuous journey. But like

so many other supposedly obvious human customs, this practice, when seriously examined, is found to reveal a long history of inception, diffusion, and decline. It illustrates the tenacity of old ideas, and not a wayward and personifying tendency of the human mind.

Mr James Hornell, Director of Fisheries in Madras, while studying archaic boat-forms in India,¹ interested himself in this practice because of the peculiar form of these eyes or *oculi* (Fig 6, i-vi). Since they occurred only in backwaters, it seemed probable that they were survivals of times long past.

On the east coast of India, many relics of ancient customs have lingered in isolated places. 'This arises,' says Hornell, 'largely because of the physical difficulties that restrict communications along that coast; the railways seldom approach the sea, save to serve some important seaport; coast roads are usually non-existent, while travel by sea is out of the question as no landing can be made on this surf-beaten coast except by catamaran. Fortunately a connected series of waterways extends roughly parallel with the coast for several hundred miles along the seaward boundary of the Madras Presidency on the east, while others traverse the deltas of the Kistna and Godavari: these give access to innumerable villages so remote and cut off from the influence of modern movement

¹ For a rich collection of Indian boat-forms and their history, see James Hornell: (1) *Origins and Ethnological Significance of Indian Boat Designs*, Mem. Asiatic Soc. Bengal, vol. VII; and on oculi: (2) *Survivals of the Use of Oculi in Modern Boats*, Journ. Roy. Anthr. Inst., vol. LIII, 1923, p. 289.

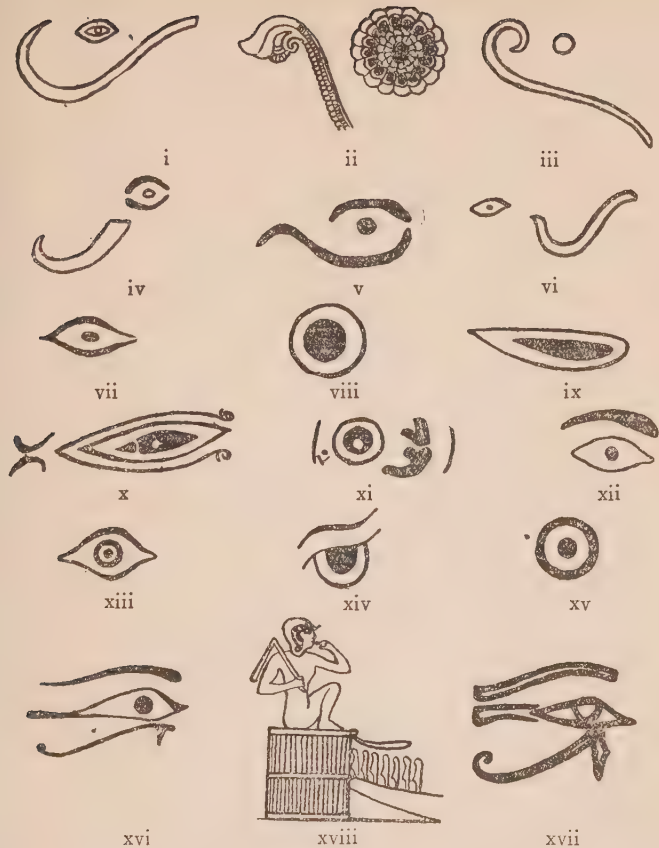


FIG. 6.—OCULUS DESIGNS ON BOATS

(i) Masula Boat, Madras. (ii) Chilka Lake. (iii) Kistna-Godavari Canal. (iv) Masula Boat. (v) Nāva, Colair Lake. (vi) Kistna-Godavari. (vii) Jaffna dhoni, Ceylon. (viii) Chinese. (ix) Annamite. (x, xi) Western Papuan Clan Designs on Canoes (reversed). (xii) British Columbian Dug-out. (xiii) Greek, Fifth Cent., B.C. (xiv) Sicilian (Greek Type). (xv) West Sicilian (Phoenician Type). (xvi) Egyptian. (xvii) Egyptian XVIII Dynasty (c. 1500 B.C.). (xviii) Horus at the Look-out (Egypt).

that customs remain in the main unchanged from what they were hundreds of years ago. It is in such communities that the use of boat oculi survives in considerable vigour. The custom is a widely spread one. It extends along the whole coast from Palk Bay to Bengal and penetrates several hundreds of miles along the course of the Ganges.'

In the north these eyes are painted on a very ancient form of boat—the *masula*. This is in itself significant, for *masula* are 'tied boats' built up by sewing the planks together with coco-nut yarn. It has already been explained that tying is the most ancient method of boat-building known to us. Many ceremonies attend the building and launching of these boats. 'These oculi are placed on the bows, vividly represented upon a painted ground, usually red in colour; each consists of two carved horizontal lines enclosing a black spot representing the pupil. . . . No care is taken to make them realistic. In some few instances a second pair of oculi is placed on the quarters, close to the stern, possibly because these boats are double-ended, sharp at both stem and stern. In a few *masula* boats a curious decoration, suggestive of the rude representation of a deeply curved moustache, is added below the oculus, sometimes in front of it and sometimes slightly behind. . . . None of the fishermen could explain its significance, finding refuge in saying that it is just a decoration occasionally added according to the owner's fancy. Curiously enough, oculi and this "moustache" symbol are as common on the boats of fishermen living in Madras city as on those

of isolated country hamlets, a fact accounted for by the social isolation in which these (outcaste) fishermen live. . . .'

Similarly oculi with the same 'moustache' are found on the canal boats—*padavus*—along the isolated waterways of the Kistna and Godavari. On the archaic-looking boats of Chilka Lake, Orissa, the oculus and moustache have been transformed into a lotus flower and stalk, a typical instance in modification of a motif into a form which ultimately bears little or no superficial resemblance to its prototype and for which the unwary suggest an independent and *a priori* origin. Oculi are also found in northern Ceylon in the very areas of which the most ancient contact with India is recorded. North, again, on the Ganges, the oculus-boats are those associated with the ancient holy city of Benares, and 'are naturally those that may be expected to retain archaic features'.

The boat-eye in India is clearly a relic of ancient times—a vestige of a former custom which survives in undisturbed and holy places, and no casual invention of whimsical fishermen. Farther afield in eastern Asia, the Pacific and North America, the oculus is also found—in Burma on indigenous boats and on sampans built on the Chinese model. In the past it was used in Malaya, while thousands of Chinese junks bear round, protuberant oculi on their prows.

In the Indo-Pacific region, the oculus is found widespread along a chain practically unbroken from the south of India through the Indo-Chinese peninsula, in China and then across the Pacific

to the coast dwellers of British Columbia. The American oculi are closer to the Indian than the Chinese, which have become stereotyped.

Hornell considers the Indian forms to be the probable source of all these oculi. But whence came they: can we trace them no further back? The clue to the problem is found in the mysterious and irrelevant appendage or 'moustache'. For in seeking eye-symbols in the ancient world, we find an eye which naturally incorporated such a 'moustache'. This is the hawk eye of the god Horus, a royal and sacred symbol used in the most important religious rites of ancient Egypt. Below from the eye there is a long curved line with a short vertical bar (see Fig. 6, xvi and xvii) indicating 'the arrangement of the short feathers below a hawk's [really a falcon's] eye, and [these] were invariably shown when the eye of Horus is depicted. . . . The fact that the Indian device varies greatly in its position and form is indeed strong proof of its high antiquity, for no Indian can explain its significance, merely following a custom in use by his fathers. . . .' An ancient sea-track slowly traversed through the centuries is brought to light by the widespread distorted survivals of ancient religious practice.

Not in eastern seas alone do we find the Horus eye. Phoenicians, Greeks, and Romans, all deeply indebted to the Egyptians for nautical instruction, have left many testimonies of their use of the eye, while the ancient and now sleepy fishing ports of the Mediterranean are still entered by boats decorated with the oculus. In Italy, Sicily, Spain, and elsewhere, Hornell has tracked down

the Horus eye, still painted by fisher-folk whose ancestors were originally taught it by Phoenician and Greek. (Fig. 6, xiv and xv.)

We have yet to explain how the Horus symbol came to be painted on the prow of a ship. Mr W. J. Perry has suggested to me the reason for the original use of the boat oculus. The whole process is so characteristic of the vast change of ideas and purpose incidental to the slow spread of an apparently simple device that we may well leave our boats a moment to consider a fragment of Egyptian mythology and temple ritual.

One of the earliest and most important of Egyptian stories is that which tells of the slaying and dismemberment of Osiris by his enemy Set. The legend of Osiris seems to be the mythological memory of the fate of a great Egyptian ruler, the prototype of a host of slain kings the world over. Horus, the avenging son of Osiris, set forth by boat to gather the scattered parts of his dead father's body. Standing at the prow of the ship he gazed over the waters of Nedyet. There are many representations of Horus under his various forms of man and hawk, or falcon, at the prow of his questing ship (see Fig. 6, xviii). Finally the watchful Horus was symbolized by the falcon's eye that was his sign. From this followed the use of the sacred oculus on royal funerary boats because the dead king of Egypt was identified with Osiris and boats played a highly significant part in the burial of an Egyptian king. A funerary barque carried the royal body across the river to the land of the dead. Model boats adorned with the Horus

eye are found in many Egyptian tombs. In Egyptian temples the sacred boat of the god lay in a special sanctuary, and the god borne aloft in his boat dominated the great processions led forth by the king on ceremonial occasions. Queen Hatshepsut burnt incense before the sacred boat of the god Amon after the safe return of the expedition which she had sent in his honour to the Land of Punt. The boat survives in the processions of many Mediterranean cities at the present time. These ceremonies, which have degenerated now into aimless festivities, retain many elements of archaic ritual and model boats are still carried in procession.

In the Fifth Dynasty in Egypt we find the Horus eye depicted on the sea-going ships of Sahuré. Here it can have little to do with funeral ceremony. Explicit details of its ramifications are lost; but, like so many other religious and royal usages, the *oculus* became gradually secularized, and adopted by all and sundry. In classical times, the *oculus* is shown on nearly every representation of a boat. It seems to have become an indispensable protection to the navigator.¹

But the classical *oculus* had already lost its 'moustache'. The occurrence of this 'moustache' in India is the most definite testimony to early maritime exploits in the Indian Ocean before the time of even Phoenician and Greek.

The fast disappearing Jaffna *dkaris*—the outrigger schooners of Ceylon—are among the few

¹ The 'Horus Eye' has left other legacies behind. Although many links in the chain are missing the belief in the Evil Eye—*Jettatura*—seems to hark back to this ancient symbol of an Egyptian god.

surviving *sea*-going boats that still carry an oculus. (Fig. 6, vii.) These boats are similar in design to those carved on the great Buddhist shrine at Boru Budur, built in Java between A.D. 750 and 900, at a period when a new wave of Indian influence was penetrating Indonesia. One of the Boru Budur boats bears the same oculus on its prow.

The boats' eyes of the Indian Ocean are fragmentary survivals; we can but guess how many and great were the voyages of western boats in those monsoonal seas in the days of dawning civilization.

CHAPTER V

THE ERYTHRAEAN SEA

I HAVE ALREADY referred to boat-designs in India, Indo-China, and the Far East that closely resemble ancient Egyptian and Arabian forms. The symbolic eye upon Indian boats and the history of its distribution farther east afford complete corroboration for the belief that the other similarities are not accidental. The only possible explanation of such facts is that there were early adventurers on the waters of that great ocean which the Greeks and Romans knew as the Erythraean Sea, and we call the Indian Ocean. Following in the wake of the Ancient Mariners, we may seek upon its widespread littoral further traces of their activities.

From at least as early as the Second Millennium B.C. maritime contacts of various kinds have

continuously influenced the Indian peninsula. The products of Ancient India were highly prized by those who were trafficking in the Erythraean Sea. During the thousands of years of this traffic manifold customs and beliefs were introduced from the west. But no Herodotus travelled so far east to tell us what he found there. Religious texts such as the Vedic hymns and the accounts of rituals in the Brahmanas make little reference to the past. This lack of historical information must be realized as normal throughout the early world. Until classical times in Greece we know of no attempt to preserve an accurate record of what we call historical events. The Egyptians, who invented an exact calendar and kept some record of their dynasties of kings, knew in, say, the Twenty-first Dynasty far less of their past than we of to-day have discovered in the researches of the last hundred years. We know more of the origins and development of the arts, crafts, and religious practices of that prosperous time than did the priests and rulers in whose service they were performed. It is not difficult therefore to understand that although many elements of Western origin can be recognized in the civilization of Ancient India and the Far East one can rarely say with certainty how or when they got there.

The earliest Indian literature affords evidence of the arrival of Aryan-speaking peoples certainly as early as the beginning of the First Millennium B.C. For a period probably lasting several hundred years, well-organized northern peoples from the plateau of Iran (modern Persia) and the Turanian basin

beyond (Russian Turkestan) entered and settled down in north-eastern India. It used to be thought that pre-Aryan India was a cultureless land of no importance. But the Aryan texts refer to great 'cities' found in the land, and speak of the powerful Asuras who ruled in the north-east. Analysis of the Dravidian cultures of south India, and of other survivals elsewhere, has further confirmed the importance of contributions from pre-existing cultures to the India which emerged from the welter of the Aryan invasions. The Aryans were indeed not the first arrivals from the north. In Baluchistan, the Punjab, and Sind, excavations have disclosed the ruins of finely built cities which show affinities with the Mesopotamian civilization. They may even be offshoots from the Elamite and Sumerian cities that flourished in the Third Millennium B.C., before the time of the Babylonian Empires. But our more direct concern is not with these immigrations by land but with the innumerable voyages across the Erythraean Sea. The beginnings of this maritime movement are vague.

The oldest civilized remains of peninsular India—of the so-called 'Neolithic' and 'Iron' Ages—bear unmistakable tokens of a western origin. The people of these early cultures left stone tombs as imperishable testimony to their occupation of certain parts of the country. The distributions of these Indian *dolmens* and other remains give important clues to the activities of the early folk; for they settled in their greatest numbers in those parts of the Deccan plateau which yielded great wealth of stone and metals.

In the districts of Bellary and Dharwhar, one of the regions in which *dolmens* are thickest, the surrounding country was found to be riddled with old workings for gold, copper, and iron.¹ In Chota Nagpur on the north-east border of the Deccan and in Assam to the far north-east, the same or kindred peoples have left remains and workings in rich metal-bearing country. Polished axes of hard stone similar to those of the Mediterranean littoral and Europe are found on the sites of these early settlements. The immigrants settled in large numbers around such important sources of raw material as the trap rocks of the Kathiawar peninsula and the North Deccan, from which fine implements were fashioned. But copper implements of similar pattern are found on some sites. Still more remarkable is the extensive use of iron which in many areas follows close on the use of stone.

What are we to think of these early people? The use of iron is a late development in the Mediterranean world.² Although known far earlier it did not supplant bronze to any great extent until the early days of Greece, soon after the beginning of the First Millennium B.C. The so-called 'Neolithic' and 'Iron-age' settlements of

¹ L. Munn: *Ancient Mines and Megaliths in Hyderabad*, Mem. Proc. Manchester Lit. and Phil. Soc. 5, 1921. See W. J. Perry: *The Children of the Sun*, p. 86 *et seq.*, for a summary of our information on early exploitation of metals in India.

² The funerary sword of Tut-Ankh-Amen (1350 B.C.) is the earliest piece of fine workmanship known from Ancient Egypt, although pieces of metallic iron and textual references to it are reported from far earlier periods.

India may not belong to an age much earlier than this; but they do not seem to be derived from the early iron-using peoples of south-western Asia. Before we assume from their iron tools a completely independent origin for their culture we must look at other elements of this civilization. The stone tombs or *dolmens* that these people built—their survivors build them to-day in Assam and Chota Nagpur—were undoubtedly inspired by influences coming from the west.

These Indian *dolmens*, although different from, and possibly later than, the megaliths of western Europe (see Chap. VIII) undoubtedly share with them an original derivation from the great stone tombs of the Ancient East. The closest parallels are reported from Syria and the Black Sea. The relationships of the groups of rough-hewn stone tombs that are scattered along the shore lands of Eurasia from Ireland to Japan, have focused attention for many years on the problem of early migrations.

The similarities of structure have compelled most investigators to consider possible, and many to admit, their unity of origin. There are, however, considerable differences in the times at which rude stone monuments were erected in different parts of the world. The spread of the megalithic idea undoubtedly has a long and complicated history. At present we know little of the way in which it spread to the East and can only postulate it from the similarity in form of tomb and the associated culture. One element is of great importance. These iron-working megalith builders

were skilled irrigators and built elaborate terraces in the hilly parts of their country. Irrigation agriculture was probably the first method devised for raising crops. The great Egyptian and Mesopotamian civilizations were entirely dependent on it and the terracing of steep country was practised on the shores of the Red Sea from very early times. Where we have knowledge of the beginnings of agriculture in outlying parts of the world, the evidence points to its introduction from without. The derelict irrigation works of these early Indian folk strongly suggest the western origin of their civilization.

It is possible that the megalithic culture arrived relatively late in India and that the knowledge of iron was introduced with or soon after it. These early cultures have often been attributed to the Phoenicians, who were indeed voyaging in both the Mediterranean and Erythraean Seas at least as early as the ninth century B.C. The holed *dolmens* of India are strangely similar to those of northern Syria and the Black Sea region, which are undoubtedly late. The Syrians, like the early immigrants into India, were seekers of gold, could forge an iron blade, and had the Mediterranean skill in cultivating the steep hills and leading water over parched slopes.

Recent work on the forms of Indian Iron-Age pottery suggests parallels in early Dynastic Egypt, while *dolmens* of very 'Indian' appearance are known from the borders of Abyssinia. These similarities in pottery and the use of polished stone implements, although they may argue an

East African connexion, are no sure indications of great antiquity, for pottery similar to that of prehistoric Egypt more than fifty centuries ago is being made in Nubia and some parts of the Sudan at the present day, so that early Dynastic wares may well have survived in East Africa down to the First Millennium B.C.

If, however, the early Indian civilization should prove to be much earlier than the First Millennium we shall have to regard their use of iron as an independent development. The conditions of iron-working in India are such as to make this an easy step, for the ores of the Deccan plateau are extraordinarily pure, abundant, and obvious. The disintegrated trap rock yields pockets of magnetic iron sand, which glistens in the streams. Whole hills formed of the richest ore have been formed from the Archaean strata. If, as our reasoning suggests, these people derived their knowledge of copper-working from the ancient centres further west, they could scarcely have failed to recognize these ores as valuable 'substitutes' for the metal already known.

It is not, however, essential for our purpose to solve the problem of the beginnings of iron-working in India. A western people introduced holed *dolmens*, worked the gold reefs, and terraced the hills of Central India, but we do not yet know the harbours whence they set forth, nor can we assign a date to their first crossing.

There is no doubt that the Asuras and other peoples whom the Aryans found in India were familiar with ocean navigation. Brahmanical

writers refer to their 'churning of the ocean', and there are many indications of extensive voyages undertaken later. Buddha himself is reported to have said: 'Long ago ocean-going merchants were wont to plunge forth upon the sea, taking with them a shore-sighting bird. When the ship was out of sight of land they would set the shore-sighting bird free. And it would go to the east and to the south and to the west and to the north and to the intermediate points and rise aloft. If on the horizon it caught sight of land, thither would it go. But if not then it would come back to the ship again.' This means of finding the position of a ship—precisely that recorded of the Ark—suggests long familiarity with the ocean and is another parallel to western practice, for it is similar to an incident in the earliest Mesopotamian legend, the Gilgamesh epic.

Perhaps the most definite clue to the range of early seamen is the transmission of the practice of mummification and the associated ritual. Elliot Smith has shown how the Egyptian practice, developed in early Dynastic times, was slowly elaborated during the many centuries of Ancient Egyptian civilization, and carried through the ancient world. The stages in its history have been traced, so that when we meet with survivals of various mummification techniques in outlying parts, it is possible to say when they left their centre of origin. Procedures elaborated in Egypt from the Eighteenth to the Twenty-first Dynasties have been discovered in Persia, India, the Malay Archipelago, and the Pacific. They involve such

specialized knowledge, which the Egyptians gained but slowly after centuries of experiment, that we can have no doubt of the reality of their diffusion.¹ The latest of these practices cannot have reached India much before 900 B.C. By the ninth century cremation, introduced by the Aryan-speaking peoples, was spreading apace and superimposing itself on more archaic burial ceremonies based on mummification. This is one of the reasons why Indian burial customs have so bewildered students who would seek their origin.

At the very beginning of our own era, in about the year A.D. 60, a Greek merchant-captain of Berenice on the Red Sea wrote a log of the ports and products in the lands bordering the southern ocean. This is the famous 'Periplus of the Erythraean Sea'. It sets down what was known of the seaways to the Indies and Cathay, detailing the cargoes of metals, spices, fine cloths, and jewels that were gathered together in the harbours of the east. But for the fortunate survival of this record, we should know very little of the amazing activity on these waters in the early days of the Roman Empire. Taking us beyond the Straits into the China Sea, he concludes: 'The regions beyond these places are either difficult of access because of their excessive winters and great cold, or else cannot be sought out because of some divine influence of the gods.' The divine influence of the gods lay in the forgetfulness of man, for lands of 'excessive winters' along the Behring Strait, and sunlit ocean

¹ For further information see another volume of this series, *Gods and Men*, by W. J. Perry.

specks in the wide Pacific, had been sought out very many years before. The eastern seas had been traversed in vessels not unlike the Greek captain's as many centuries before the 'Periplus' as the 'Periplus' is distant from Vasco da Gama's discovery of the Arab traders in Zanzibar. But until the beginning of the first century the Romans had known almost nothing of the Erythraean Sea, for its Red Sea entrance was closely monopolized by Arab traders who, like the Phoenicians on the Atlantic, would let nothing be known of the sources of their merchandise. As far back as the seventh century we can trace a regular sea-traffic, and ships from India and even China arrived in Babylonian ports. The seamen were mainly Dravidian.

The 'Periplus' hails as a great benefactor a Roman captain, one Hippalus, who had discovered that the greedy traders of the Arab key-ports could be circumvented if a vessel trusted itself to the summer wind that set strongly from the west. From that time coastal sailing was abandoned. 'This whole voyage . . . from Cana and Eudaemon Arabis, they used to make in small vessels, sailing close around the shores of the gulfs; and Hippalus was the pilot who, by observing the locations of the ports and the conditions of the sea, first discovered how to lay his course straight across the ocean. For at the same time, when with us the Etesian winds are blowing, on the shores of India the wind sets in from the ocean, and this south-west wind is called Hippalus, from the name of him who first discovered the passage across' (*Periplus*, par. 57). This 'discovery' of Hippalus occurred

only a few years before the writing of the 'Periplus' (i.e. about A.D. 45), but it is inconceivable that the Arab and Dravidian craft which had frequented these seas for so many years were unacquainted with the monsoon winds, and their traditions indicate that they had long sailed boldly into the open sea. Hippalus must be remembered, not for a discovery new to the world, but for freeing the Roman Empire from Arabian monopoly of the eastern trade by tracing it to its source. Beyond India no lasting discovery was made.

The ships in which Hippalus and the author of the 'Periplus' sailed probably 'did not differ very materially from the types created in Egypt long before, as depicted in the reliefs of the Punt Exhibition . . . and elsewhere. By the first century A.D. the single square sail, with two yards, each much longer than the height of the sail, which distinguished the shipping of the fifteenth century B.C., had been modified by omitting the lower yard and by increasing the height of the mast; while a triangular topsail had come into general use'. We find these additions on the Burman trader 'which perpetuates in many ways the shipbuilding ideas of Ancient Egypt, [and] probably gives a better idea of our author's ship than any of the Greek or Roman coins or reliefs, which were all of Mediterranean shipping, built for different conditions and purposes'.¹ Throughout all the centuries of traffic only minor additions had been made in the ships that sailed in the Erythraean Sea. The main lines of the Chinese junk, so well

¹ W. H. Schoff: *Commentary on the Periplus*.

known in the harbours of the Far East, had also been laid down in early days, for a vessel which has all the modifications characteristic of the Chinese junk is pictured in a painting of the seventh century B.C. in India. The oculi and the painted decoration on junks in south China are also characteristically Indian, so that these huge and many-cabined vessels undoubtedly owe a large debt to the shipwrights of the west.

Those who would not heed the witness borne by the archaic fragments strewn on Erythraean shores, and doubt if ancient ships left the ports of the Red Sea and the Persian Gulf for the Indies, should take warning from the later 'Periplus'. Of the voyages there recounted fewer signs remain than of the more perilous feats of earlier days.

CHAPTER VI

THE PEOPLING OF THE PACIFIC

AFTER TWO generations of research into the history of the Pacific, it appears probable that until some time about the beginning of the Christian era many of the islands lying to the east of the Asiatic land mass were uninhabited. In the islands near the Asiatic coast, extending from the Malay Archipelago to Papua and Australia, primitive Australoid and negrito food-gatherers, people who had not acquired a knowledge of agriculture or cattle-breeding, once roamed in scattered

groups. Into the islands of the western Pacific, the Solomons, the New Hebrides, Fiji, and others, a negroid people, the Melanesians, had wandered at an early date; there remain also traces of movements farther afield on the part of these or other peoples. But it was not until the great colonizing movement of the brown-skinned Polynesians that the present population of the South Seas was created.

The earliest datable record of the Polynesians in the Pacific goes back to about the fourth century A.D. Their rapid expansion is so epic in its grandeur that we must recognize them as among the most intrepid of ancient mariners, far more glorious in achievement than the Argonauts of classical tradition. Moreover, the scope of these exploits, undertaken with very scanty equipment, demonstrates the intrinsic probability of extensive maritime movement in still earlier times, for the Polynesians were less, not more, efficiently equipped than the seamen of Hatshepsut's fleet in 1400 B.C.

They had, of course, no knowledge of the compass, and their ignorance or, more probably, loss of the use of metals was a serious handicap in the construction of vessels. Their boats were huge outrigger—or double—canoes built by the addition of planks (top strakes) on a dug-out foundation.

'All the work was done with stone tools. Where timber was scarce or trees were of small size, the dug-out hull was only a shallow trough, the sides being built up of several tiers of short plank length, demanding much careful labour in joining. Where large-sized trees were available, as in New Zealand,

dug-out hulls of great length and considerable depth were made. 'These required but one top strake.'

Some vessels were provided with two masts on which lofty triangular sails were set.

'The single canoe of Polynesia is a quick sailer and less cumbrous than the double canoe ; it seems to have been more favoured by voyagers in some cases, though the Tongans made their remarkable voyages to Melanesia in a big type of double canoe traceable to a Fijian origin. The Fijians, a Melanesian folk, constructed fine vessels, but made no voyages outside their own group save as companions of Polynesian voyagers. . . .

'Cook remarks that some of the New Zealand canoes would carry sixty, eighty, or a hundred people. Cruise, in 1820, saw a fleet of eighty of these, many of which were seventy to eighty feet long and few less than ten. He also mentions one eighty-four feet long, six feet wide, and five feet deep made from a single log. With ninety paddlers and three fuglemen she moved with astounding rapidity, causing the water to foam on either side.

'Many Tongan double canoes were a hundred feet long and carried a huge lateen sail, while the deck supported a house or cabin. . . . Cook saw a fleet of 160 large double canoes at Tahiti besides 170 smaller ones. At Samoa the larger hull of a double canoe was sometimes considerably over a hundred feet in length.'¹

Equipped with these vessels the Polynesian

¹ Elsdon Best : *Polynesian Navigators*, Geog. Review, v. 3, 1918, p. 177 ff.

rovers covered millions of square miles of ocean in the space of a few centuries. They have fortunately left a body of very coherent and mutually corroborative tradition, which enables us to follow with considerable certainty the main lines of their expansion. Everywhere the Polynesians maintain that they came originally from the west. It must not be thought, however, that the Polynesian migrations represent a deliberately planned movement maintained over long centuries with a single ultimate purpose behind it. From all we know of migrations on both land and sea, it was rather a spasmodic process in which each further advance was due to social or religious factors which slowly became insistent enough to cause a further movement. After a period of expansion in the Indonesian region, they moved out into the Pacific area at a time when northern Mongols, forbears of the Malays, were pressing south. They passed along a southern route through the Fijis and Samoa to the Society Islands, and also along a northern seaway to the Hawaiian Islands; both groups were great hiving centres from which expeditions went forth in all directions. The most easterly point to which we can trace undoubted *Polynesian* migrations is lonely Easter Island, more than three-quarters of the way across the Pacific, but, as we shall see, there is an intrinsic probability as well as evidence to suggest that the Polynesians, and perhaps even their predecessors, traversed the entire Pacific.

Fortunately there have survived records of actual voyages which emphasize the magnitude of these

movements. As the map shows, such voyages as those from Hawaii to Tahiti and from Tahiti to New Zealand call for the navigation of long distances, broken by few or no havens of rest. A considerable supply of stores would have to be carried and great care displayed in keeping the course. In the voyages from Tahiti to New Zealand, of which many were made, the navigators ran down to Raratonga in the Cook group and from there launched out on the run of about 1,600 miles to New Zealand. The voyage was made in December when the wind was favourable, the return voyage being made in June. This long run would probably occupy about a fortnight, but might have been done in less time with a steady wind. On this voyage vessels sometimes called at Sunday Island, which is 600 miles from New Zealand, but so small an island must, one would imagine, have often been missed.

Mr Elsdon Best relates that 'Potter, an American voyager, collected some interesting notes early in the last century of voyages made by natives of the Marquesas group. He tells how the grandfather of a reigning chief sailed with several families in four large canoes in search of other lands, taking with him hogs, poultry, and young food plants. In this manner have the bread-fruit, coco-nut, banana, young sweet potato, taro, etc., been distributed over the oceanic area. Most of these food-producing trees and plants are traceable to a western source, as also the aute or paper milberry, but the sweet potato and coco-nut are thought by some to have originated in America.'

The last record is extremely important because it describes a process which must have played a great part in the beginnings of civilization, whereby a culture brings its own population, domestic animals, and plants into an area previously empty. This, rather than the slow education of uncultured aborigines, is the way in which the great advances in outlying parts have been made.

Study of the primitive food-gatherers who survive shows that any extensive transference of culture to these people is very rare. The competitive character of the contact with other people, who want their land for more productive uses, inhibits such transference between, for example, Bushmen hunters and Bantu herdsmen in Southern Africa. The negritos of the Philip-pines, although adopting the languages of various neighbouring agricultural tribes, remain impervious to their material culture. It would seem that the spread of civilization has been almost entirely due to actual colonization by peoples coming out of areas of advanced culture, and that primitive people have been 'raised' in level only by actual domination. The stories of immigrant culture heroes that fill the legend-histories of so many peoples, from areas as widely separated as Indonesia, Australia, and North America, are witnesses to the importance of this process. In the islands of the Pacific the conditions are even more complete, for there seems little doubt that before the maritime expansion of peoples from the south-east Asiatic mainland and archipelago, the islands were uninhabited by man. It is by no

means certain, however, that the Polynesian voyages recorded in the histories of the Maoris and others were the earliest to be undertaken. There is, as we shall see, evidence of movements of which all tradition has died.

In New Zealand some remarkable rock carvings of boats have recently been discovered. These vessels are of great interest. They have some resemblance to the Maori single canoe, and, like them, some are decorated with a spiral ornament. They are said by their discoverers to resemble Greek



FIG. 6A.—NEW ZEALAND ROCK CARVING (cf. Fig. 3A)

galleys, and, like them, are equipped with 'ramming beak' and 'boarding platform'; but there is an even closer resemblance to far earlier Aegean boats of the Minoan civilization (cf. Figs. 6A and 3A), although we have no other evidence to test the validity of these parallels. I have already suggested that these 'beaks' may have been derived from the addition of numerous top strakes to a projecting dug-out hull or log-keel. In their high, upstanding prows the vessels represented in the rock-cut pictures also share with many Polynesian war canoes features characteristic of Egyptian designs of the fourteenth century B.C. and earlier. There

are legends and remains in New Zealand which suggest the existence of a pre-Maori population of higher civilization than the recently arrived Polynesians. Certain high-prowed and high-stern Melanesian boats have close similarities in design of hull to the Sahuré ships of 2700 B.C. The Melanesians, when compared with the Polynesians, were a very sedentary folk. Nevertheless they had expert shipbuilders, and many features of their boat-design and decoration are impossible to explain as local developments. The vessels of the Pacific, therefore, show definite, though fragmentary, traces of descent through the great traditions of shipbuilding in the Ancient East.

We must make some attempt to discover the reasons why all these long Pacific voyages were undertaken. Some of them were undoubtedly accidental. Many vessels sailing between islands fairly near to one another were forced by wind or current from their course and could do nothing but drift in search of land. These involuntary drift voyages often had far-reaching effects—the first Polynesian inhabitants of New Zealand seem to have arrived in drift canoes, and there are many records of drifts in modern times. ‘Cook found castaways from Tahiti on Ahu Island of the Cook group. In 1721 one hundred canoes reached Guam after a drift voyage of 20 days. Kotzebue encountered a Japanese vessel off the California coast in 1913 that had drifted for 17 months across the north Pacific. The Japan current has carried a number of such vessels to the coast of British Columbia and one such was wrecked at the Hawaiian

Islands. Pritchard mentions a community in the Loyalty group who are descendants of castaways from Tonga over 1,100 miles away ' (Best).

But it is quite certain that deliberate voyages of thousands of miles were also undertaken, although the motives of the sailors are not very clear. Many writers ascribe everything to the adventurous nature of the Polynesians. The negroid Melanesians have been consistently averse from long sea voyages, and have taken part in them only in company with, and presumably under the control of, Polynesians. The Polynesians of Tonga, for example, adopted the superior double canoe used by the Melanesians of Fiji and made many voyages to Fiji, but Fijians never sailed to Tonga unless Polynesians accompanied them. But we know so little of racial differences in these matters, and can demonstrate so clearly that apparently similar ethnic groups have displayed entirely opposite qualities at different periods of history, that we must be reluctant to adopt such unverifiable data as a complete solution. Alleged pressure of population is an *a priori* explanation that is greatly weakened when comparisons are sought. Communities of which we have historical knowledge maintain stability of numbers, unless some external factor upsets the balance between food supply and population. Carr Saunders has shown that so long as the basis of subsistence remains stable, population does not increase but is kept in check, if necessary by some form of infanticide. If the food basis is augmented, population rises within a very short time. The steady curtailment of food supply may

have the effect of driving people out into new areas, but there is no evidence that population in an area of stable resources rises beyond saturation point and is compelled to emigrate.

We are probably safer, therefore, in relying on social and cultural factors to account for the persistence of these Pacific voyagings. It is on these points, however, that data are lacking. Perry has suggested that the pearl beds of the Pacific were one of the great factors in stimulating and directing the early migrations. The extensive use of pearls and pearl shell for religious purposes by both Melanesians and Polynesians, and a remarkably close geographical correlation between the distribution of pearl beds and the early settlements in the Pacific, lend weight to this hypothesis. He notices the abundance of ancient remains in groups where the pearl beds are richest: 'Megalithic monuments and irrigation systems are not found in every island of the Pacific. The original colonisers of Oceania brought with them their food plants and made habitable the islands where they lived. They therefore must have had some reason for settling in one place rather than another, but from the standpoint of natural conditions it is hard to see what influenced them. What is the cause of the great activity round Tahiti, with the building of numerous pyramids, when the fertile soil of New Zealand lay ready for occupation and was known in early days to the Polynesians? Why were the Paumotus more highly favoured than the Gilberts or the Ellice Islands? Why was Penryhn Island chosen as a site for megaliths rather than

others in the vicinity? What is the difference between New Caledonia and New Zealand that their history should be so different?'

Analysing the distribution of pearls and of the monuments of the earliest settlers, he suggests that 'since the two distributions agree so closely, the first colonisers of the Pacific were led by their desire for pearls and settled where they found banks of the shells that yielded them what they sought. The presence of the early folk is indicated by that of megalithic monuments, stone images, and [derelict] irrigation systems. These are absent in those places where no pearls are reported. Since these latter groups are now inhabited, the inference is that the first colonisers of the Pacific [neglected] them because they contained no pearls, and not because climatic conditions prevented settlement.' The Society Islands and the Paumotus form the most important centres for pearl fishing in the Pacific. Tahiti, the largest of the Society Islands, was one of the most important of the centres of early culture in the Pacific. In Samoa, on the other hand, where pearl resources were far less abundant, early settlement, as indicated by ancient remains, was much less intense. There is little doubt that the early people who left massive stonework in so many of these Pacific groups were the ancestors of the Polynesians, and that there is continuity of civilization between them. But the Polynesians in their numerous wanderings have lost much of their material culture, far more so than have the less mobile Melanesians.

By means of the genealogical tables of chiefs, we

know a good deal of the later voyages of the Polynesians from the time of their appearance in Samoa and Fiji about A.D. 480. A great period of voyaging set in after about A.D. 650 (as computed from the genealogies) until the time of the main (but by no means the first) immigration into New Zealand about A.D. 1350.¹

Of their history before this we have much less precise information. What we know, however, suggests a series of migrations from farther west, going back at least as far as India, where Polynesian types of men and of boats and fishing devices survive at the present time on the south-eastern coasts. An early record of the legends of these south Indian folk claims that they are descended from one of the pre-Aryan ruling families of India. The spread of early maritime civilization in the Indian Ocean, which we have already discussed, takes us back from the Pacific along a chain of culture, if not of race, into the Ancient East, with which we began.

One other great problem suggests itself. Did no Asiatic navigator ever gain the far side of this fearlessly sailed ocean? Apart from natural interest in so great an adventure, the question is of great importance to science, for our theories of the processes at work in the upbuilding of civilization will differ fundamentally according as we believe the pre-Columbian cultures of the New World to be entirely independent in their development, or derived, however indirectly, from the Old World. In Central America, Mexico, and Peru, there grew

¹ See Percy Smith: *Hawaiki*, pp. 173, 490, etc.

up remarkable civilizations, related one to another and themselves the sources of the lower cultures of the American continent. If they were completely independent, remarkable parallels in customs and achievement must be admitted between peoples of the Old World and the New. Starting with practically nothing in common but their humanity, both achieved the crafts of irrigation-agriculture, of building and working in stone. In both hemispheres there were elaborate cults of sun-gods, associated with human sacrifice, and rituals in which curious and arbitrary similarities appear. On the theory of separation it would follow that there are innate qualities in man which lead him, no matter where he is, to develop similar crafts and similar ideas. But this method of explaining cultural similarities between peoples widely separated in space and time is hotly contested. We have already seen with the 'oculus' how easily the evidences of transmission may be effaced by the waves of time.

Our attitude will be very different if the trans-Pacific civilizations can reasonably be thought to have relations with the ancient culture of south-eastern Asia, and if we conclude, as a working hypothesis, that Old World knowledge lies at the root of these American advances. We then regard new developments of custom and belief as slow and spasmodic phenomena. We recognize that elements of culture have been carried over immense distances and have survived long after remembrance of source and origin has been effaced. Decline in skill, adaptation, and unbalanced growth in new

homes will often leave only misshapen and even unrecognizable progeny at the far end of the chain.

Let us examine the intrinsic possibility of trans-Pacific connexion. We have already seen that the Polynesians undertook voyages of thousands of miles, that with good fortune they were able to make islands which were mere specks in the ocean. Sterndale, a very experienced and capable observer, collects many instances of extensive voyages, all pointing to the probability of trans-Pacific contact in early times. Of them he says: 'Easter Island, which lies about half-way between the American Continent and the Marquesas, was populated by migrators from the Marquesas, Tahiti or the Paumotus, and, if they got so far, why not the rest of the way? The crew of the *Essex*, a whaler which was sunk in the Paumotus by an infuriated whale—which charged the vessel twice and stove her bows in—made the coast of Chili in a whale-boat; and the Polynesian canoes were much larger and more seaworthy. . . . My brother writes: "The largest I remember having seen consisted of two canoes lashed side by side, one (as is the rule) somewhat larger than the other. Of these the biggest was over six feet deep in the hold and of a capacity of about thirty tons, the smaller about twenty tons. There was not an iron pin or bolt in the whole huge fabric, which was constructed (with the exception of the floor) entirely of small pieces from two to six feet long and not more than a foot wide, strongly stitched together with plaited cord. All this sewing was on the inside, not a thread was to be seen outwardly; neither would the

joints have been easily distinguishable save for the variety in the colour of the different pieces of wood. Every piece was made with a deep flange running round its interior edge through which the holes were bored and the stitches passed. It seemed a miracle of patient ingenuity, and could not fail to astonish the civilized spectator, in the presence of the reflection that all this work had been performed with implements of stone and bone. It must have occupied a number of men for very many years. Upon the beams which connected the two canoes was erected a stage at either end of which were long heavy oars whereby to steer; in the middle space was a large house. There was only one mast (as is the rig of all sea-going canoes in the Pacific) exactly in the middle, with a crutch at the top for the halyards of the great lateen yard. These vessels do not go about; the yard is swung from stem to stern and the helmsmen shift in like manner. The sail is enormous, being triangular and made of Pandanus mat; and in favourable circumstances they sail very fast. This canoe carried four hundred men, with their water, baggage and provisions; but I have heard that there were some years ago, and perhaps still are, in Tonga and the Windward Islands of Fiji, canoes of the same build which went to sea with twice that number on board, counting women and children. However the one I saw was fit to cross the Pacific in any direction, and the idea of many such vessels having of old time crossed from the eastern islands of Polynesia to the west coast of America is neither improbable nor surprising.”

Sterndale also records drift voyages of great length and duration: 'Some years ago, one William Hamilton, with two other Europeans, Davis and Lucas, started in a small schooner laden with pearl shells from Tahiti for Hawaii; they lost themselves and were picked up in the neighbourhood of Manilla in the Philippines, a distance of 6,000 miles from whence they started. . . . A century ago a Chinese or Japanese junk found its way to Ascension in the Carolines, 1,600 miles from Japan and farther from China. Another vessel of the latter nation drifted to the Sandwich Isles after being eleven months at sea, and another to Puget's Sound in North America.'

In his great work on Pacific voyages (*Malaio-Polynesische Wanderungen*) Friederici calls attention to the great significance of the finding of a wooden raft of the Manareva (Paumotu) style, with double masts side by side spanned by the sail, on the Pacific coast of America in the latitude of the Inca Empire. This *jangada* carries the only authentic pre-Columbian sail. Friederici, realizing that the Polynesians had all the ways and means for reaching America, considers that in 'view of the extraordinary large number of ethnological parallels all doubt that they actually did so must vanish'.

We have already met, in both North and South America, reed canoes similar in design and method of construction to those of the Old World. These vessels could hardly have been used for trans-Pacific voyages, and they do not appear to have been made by the modern Polynesians; but the close

parallels strongly suggest that they belong to a very early period of transmission, the prototype in America being built by people who had used them elsewhere. To-day all particulars of how and whence they came have disappeared. Our meagre chronological data give some further support to the probability of trans-Pacific contact. The earliest centre of all civilization in America, and the source whence knowledge was carried north to Mexico and south to the Andes, lay in the isthmus of Central America. The approximate time at which the early Maya cities of this land were built has often been said to correspond with that of the beginning of the Christian era. It is now becoming fairly clear, however, that this estimate exaggerates their age, which may be even as late as the seventh and eighth centuries A.D. We have already seen that the centuries immediately preceding and contemporaneous with them were those when Polynesian navigation was at its height. This, moreover, closely follows a time when new developments in India and the Near East were affecting southern Asia, and disturbances in the Indo-Chinese region were driving men from their homes. We know woefully little of what actually happened; the Polynesian records are but quotations from a greater saga. But then, if ever, the time was ripe for movement. The succession of the Indo-Chinese movements, the Polynesian expansion, and the dawn of Mayan civilization, certainly favour a belief in the unity of the works of men.

CHAPTER VII

IN NORTHERN WATERS

MUCH ANTIQUE flotsam cumbers the sea-tracks which linked Eastern Asia to the Ancient East. No less frequented were the waterways which bore early civilization to Atlantic Europe.

We return again to the scene of beginnings in the eastern Mediterranean. In the times of the New Kingdom in Egypt and of the great palaces in Crete (the Middle Minoan) many great cities and rich productive areas contributed shipping to this sea basin. Boatload by boatload, raw materials and finished merchandise were steered into its ancient harbours. The achievements of the Cretan metal-worker graced the rich man's house at Thebes ; Cretan skill in the fashioning of stone, one among many of Egypt's gifts, vied with early Egyptian work itself in the formal beauty of its vases and the colour-patterns of the polished stone. In both Egypt and Crete, bronze—an alloy of copper and tin—was the metal of which swords and implements were made. In this tough but ductile material, magnificent implements and ceremonial swords were being made. Huge quantities of ore were yearly required.

But these centres were now only leaders in a bronze-using world. The arts of civilization were being spread apace. At the entrance to the Black Sea, on the Dardanelles, was a city, already ancient,

but with many centuries of achievement still to come: a city whence voyagers found waterways across the Euxine and up the Danube into the heart of Europe. Ancient Troy was undoubtedly inspired and taught by the great Egyptian and Cretan masters of the arts; but the traditions and skill of early Mesopotamian cities also made their way along landways, whose turnpikes are only now being slowly disclosed; and Troy, partly on account of its unique fusion of Egyptian, Cretan, and Babylonian elements, remains distinct and somewhat inscrutable in its wealth of ancient things. Along the Levantine shore, later the hive of the Phoenician merchant swarm, rich city ports were trafficking the wealth of the Ancient East. In south-eastern Asia Minor, the land of Caria was already populous and the mysterious Hatti were expanding in Cappadocia. We know little of events in Asia Minor at this time—the wealth in gold and silver and copper that the bleak Anatolian Mountains offer must have lain tributary to the smiths of this ancient world, but exploration has been hampered and difficult in the land of the Turk.

The waves set up on Mediterranean waters did not spend themselves on inland seas. They broke on remote shores to west and north, bearing the foundations of the arts and crafts elaborated by the men of the Nile and of the Island Realm. Throughout the western Mediterranean, there are found desolate ruins which go back to these times. Many are said to belong to the Copper Age, for copper weapons and tools have been found in settlements and tombs. But because they

do not yield bronze we must not regard them as ruins of locally developed civilizations climbing independently to higher stages. Their ruins and associations imply, on the contrary, that they are ultimately the products of the Bronze Cities farther east. But their imitating smiths were less skilled and less well equipped. In the modern world the scale and standard of efficiency falls away quickly as one passes from the great centres of industry. Crude and makeshift imitations represent, in outlying areas, the elaborate plant of our great industrial cities. There is most varied evidence for the view that the early cultures of Europe are derived by processes of propagation from the Ancient East. Their fundamental constructions, implements, and beliefs appear to be imitations degraded by poverty of equipment, and by frequent misunderstanding, with the passage of years, of the uses and aims which called them into being. After a period of isolation, no single object or activity bearing the exact stamp of its Eastern home remains, but the complex of reminiscences finds its only explanation in ancient implantations of civilization. The clearest way to follow this continuity through decline is to take the least imperishable of the monuments to the early Western spread of civilization—the great stone tombs of the Mediterranean and western Europe.

The string of ancient settlements along the Mediterranean and Atlantic, on island eminences and sea-washed promontories, undoubtedly mark out a sea route which reached to Britain and beyond. That any ancient ships sailed from end

to end is perhaps improbable. Had this been so we should expect to find a complete transference of goods. But no Cretan sword or vase, no Egyptian statue or trinket has yet been brought to light in an Irish cromlech, a Wiltshire long barrow, or a Norwegian *dolmen*.

The history of the rough stone tomb is long and complex: at certain points the sequence is plain, at others the links are more broken and we can but infer much from other associations and the reasonableness of the finished picture. If we beach our ships in Sardinia or the Balearic Islands, on the south-west coast of Spain, in Spanish Galicia, on the Breton shore, at Land's End, or the shelving beaches of the Danish Islands, we meet, sometimes half drowned on the coast, great rough-hewn chambers, tall rock pillars or circles of stones which tease the imagination in their ageless solidity. So many are completely ruined that it would seem impossible to work back to the time of their construction, and locally they will be attributed to Druids, giants, gnomes, or even to Caesar. But their similarity throughout widely separated areas and their littoral distribution compel recognition of the unity of inspiration displayed in these megaliths. The megalithic culture must have lasted long, and variants developed in the different regions, but main types almost exactly similar can be seen throughout the Atlantic coastlands of Europe. The central feature is the *dolmen*, a slab-roofed chamber, which was a burial tomb. These were originally all covered by an earthen or rubble mound. From Spain and

France we know that this mound was sometimes, perhaps always, faced with dry stone walling paved around and encircled by a ring of stones.

It used to be thought that these elaborate tombs were attempts to represent caves in country which did not afford natural burial caverns. But this was an assumption made by modern folk in western Europe, and there is no evidence for it. If we go back to the sources of light in the Ancient World we find a very different process. In Egypt there developed from the early Dynasty period (about 3000 B.C.) a practice of burial in a tomb cut vertically or horizontally into the limestone cliff faces that bounded the valley.

In Crete and the Aegean generally the rock-cut tomb was used for a very long period as the place of burial for important persons. Many are known to us. Here developed a standard form which was built by hewing first a downward sloping passage in the ground (the *dromos* of the Cretan tomb). When sufficient depth had been attained in this manner, a portal was hewn out in the vertical face at the end of the *dromos* and the excavation enlarged within to form a commodious chamber. These tombs were constructed in relatively soft limestone, and chambers of similar design have been discovered excavated in the limestone of Palmella (south-west Spain) and in the soft chalk of the Marne in north-east France (Grotte de Courjonnet, Grottes de Villevenard, etc.). But the rocks of the earth are not all easily hewn with bronze and still less with copper and stone tools. Even in Crete, other devices, including the building up of

cupolas above shallow excavations by corbelling, were adopted. As a result of motives yet to be explained, regions of old hard rocks were the most sought by early voyagers to the West, and here excavation was impossible. The poorer resources of prospectors far from home made it increasingly difficult to excavate in any but the softest rock.

The ancient Etruscan tombs on the resistant massifs of Tuscany have a very Aegean look, and many other features of these people suggest an Eastern origin. It is likely that the original founders of ancient Etruria came from the region of Caria in south-west Asia Minor. Their occupation of these relatively barren uplands is associated with the rich mineral resources. Their metal-work showed very great skill.

In the islands and peninsulas of the western Mediterranean are many tombs, both above and below ground, which testify in plan to their Eastern origin. But it is in Iberia that we have the clearest indication that the rock-cut tombs of Egypt and Crete were the prototypes from which the megalithic monuments of western Europe were derived. Many of the chambered tombs in Spain were built on the sloping ground of some small hill, very shallowly excavated, and for the rest built up of local rock. To maintain the illusion of subterranean sepulture a few cubits have been added to the stature of the hillock by piling on rubble over the built-up part of passage-way and chamber. Others, built on level ground, were not excavated at all; great flat slabs of stone formed wall and roof to passage-way and chamber. A mound piled on

top gave a fictitious air of excavation. Hundreds of these chambers remain to the present day in Spain and Portugal. The mound and its facings have often long disappeared. In Brittany and central France, again country of hard granitic rocks, these *dolmens* abound. Their grey masses surmount the stony summits of the plateaux and flank the marshy streamlets threading across the uplands.

Their range continues by way of the Channel Islands on to the barren upland of Land's End and the moors and downs of England. In mountainous parts of Wales, in northern Scotland, both southern and northern Ireland, and even in the far-flung Orkney Islands, similar tombs are found. A further series flanks the entrance to the Baltic Sea and lines its southern shores. The most cursory knowledge of the lands of Europe forces us to recognize that the megalith builders who crept along this Atlantic sea-track must have had curious aims to people only such barren territories. It is precisely in the nature of the lands they occupied that we find a clue to the motive for their wanderings.

Let us consider awhile the means whereby these tombs could have become scattered along the Atlantic fringe of Europe. A survey of the ancient sites of Atlantic Europe shows that the tools and works of the megalith builders were the first elements of true civilization in the countries they entered. Before their time there is no sign of agriculture nor of animals tamed for work or food. We might think of a rapid advance by long sea journeys. But the variety in type of tomb and

the increasing poverty of equipment as we go north suggests, rather, a slow process of propagation. However this may be, a process of sea *colonization* is marked out by these ancient stones. Until production and desire for exchange have developed at both ends of the chain there is no question of trade between distant lands. The Spaniards of Columbian America were no traders; they went themselves and took by force the riches of the new-found land. The opening up of every new territory by the industries of the modern world began in a process of exploitation in which men from home went themselves to collect the newly discovered resources. The pre-Megalithic populations of western Europe consisted, as far as we can tell, only of scattered surviving food-gatherers of derelict Old Stone Age culture. They were probably too few to matter greatly, and produced little from the earth's store that was of value to the megalith builders, who worked flint as finely, knew how to till the soil, and were better equipped for hunting. For these reasons we cannot appeal to trade as the means whereby this more advanced civilization of Mediterranean origin penetrated western Europe. The arrival of exploiters and pioneers is the event the old stones chronicle. But what did they exploit, and why and how?

We have already seen that the great centres of culture of the Second Millennium B.C. were obtaining great quantities of copper, tin, and other metals, and the riddle of their mine-fields joins with the riddle of the megaliths to afford mutual solution. The megalith builders, concentrated mainly on old

granitic uplands, were settled on the lands rich in these ores. In Spain they worked the gold and copper. The more remotely they travelled the less use they themselves made of the ores they won. Perhaps no Mediterraneans penetrated thus far. The bearers of the megalithic culture to the north-west moved out from the Iberian half-way house and knew of the Ancient East only from the ships that, coming from their ancestral land, put into their harbours. There are many signs that megalith builders mined their rocky lands, and the decline of metal-using among them suggests a slow process of degeneration which resulted at last in their forgetting all but the value of their ores to southern kinsmen. Their burial practices were more easy to maintain. Although degraded, they continued probably long after any regular contact with the South had ceased ; for it seems clear that in many places these metal-searching mariners left isolated progeny who, forgetful of the quests and voyages which had landed them on distant shores, yet maintained the cults of their fathers and continued to build massive stone tombs, until the days when later continental warriors swept away their creeds and customs.

I have already said that no certain vestige of their boats remains. There are, however, some ancient rock carvings of boats in Sweden. These are generally ascribed, on the authority of Montelius and others, to a later period—the European Bronze Age, about 1000 B.C.—when the use of tools and weapons of this metal had spread north-west from central Europe. These vessels are, however,

not boats of inland river men. Their archaic forms have most astonishing parallels. A distinctive feature in the clearest of these many-oared canoes is the forward projection of the keel below and beyond the prow of the built-up portion of the boat. The prow itself is crowned with the horned head of a goat or ram. These vessels are clear prototypes of Viking ships of many centuries later; but more curious is their similarity to



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FIG. 7

(i) East African Boat—Victoria Nyanza. (ii) Bronze Age Carving—Scandinavia

boat survivals in the most unexpected places. In Stanley's epic *Through the Dark Continent* (1878, Vol. I, p. 451) is portrayed a vessel of similar proportions in which exactly similar features of projecting keel and ram's-head prow are shown. This is one of the war vessels on Victoria Nyanza, whose archaic structure helped us to understand the very beginnings of shipbuilding (Fig. 7). Chatterton (*Sailing Ships and their History*, p. 109) notices 'the many points of resemblance of the

Scandinavian ships' to certain types of Phoenician vessel. By 1000 B.C. the Phoenicians had begun to take over the Aegean traffic of the outer ocean, so that the Swedish boats may possibly be craft born of Punic inspiration.

Similar methods of construction, resulting in a double prow, are reported by Warrington Smith (*Mast and Sail in Europe and Asia*, p. 350) from Singora Lake, where the Malays build boats of this type at the present time. We can hardly doubt that the Scandinavian carvings record the arrival of built-up sewn boats in north-western Europe. The earlier megalithic folk may well have had such craft, for we have seen that the sewn boat must have been well developed in Egypt at least as far back as the early Dynastic Period (3500 to 2500 B.C.).

The reminiscences that the megalith builders treasured in their Oriental tombs, turquoise (*callais*), green stone (*jadeite*), axes, and carinated pottery (a form imitated originally from stone vases and modified in Atlantic Europe into the bell beaker), are of the Egypto-Cretan world. We cannot doubt, therefore, that their boats, originally sailing forth from Aegean and Levantine waters, were built on the Egyptian model that set the standard of antique shipping. But of tangible remains we have none; the sea has taken back the craft of its conquerors.

The history of ancient ships and early maritime adventure thus affords the most definite evidence of the reality of the ancient diffusion of culture

and the chief means whereby it was effected. It also reveals the fact that the ships in which the great sea-going exploits were achieved, whether in the Mediterranean and Atlantic, the Red or the Erythraean Sea, or the Pacific, were mainly vessels such as were elaborated in the Ancient East and inspired by Egyptian models. Egypt provided much of the cultural cargo of these Ancient Mariners, as well as their ships and their knowledge of seamanship.

